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ANNUAL REPORT OF THE

*Governor of The
Panama Canal*

FOR THE FISCAL YEAR 1949

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1948/49

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ANNUAL REPORT
OF THE
GOVERNOR
OF
THE PANAMA CANAL
FOR THE
FISCAL YEAR ENDED JUNE 30, 1949



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1948/49

LETTER OF TRANSMITTAL

WASHINGTON, D. C., *October 17, 1949.*

The Honorable, The SECRETARY OF THE ARMY,

Washington, D. C.

MY DEAR MR. SECRETARY: I have the honor to submit the report of the Governor of the Panama Canal for the fiscal year ended June 30, 1949.

Very respectfully,

F. K. NEWCOMER, *Governor.*

III

OFFICIALS OF THE PANAMA CANAL AND PANAMA RAILROAD COMPANY

The following is a list of the major officials of The Panama Canal and the Panama Railroad Company as of June 30, 1949:

The Panama Canal

Brig. Gen. F. K. Newcomer, U. S. A., Governor.
Col. Herbert D. Vogel, U. S. A., Engineer of Maintenance.¹
A. C. Medinger, Superintendent, Dredging Division.
Capt. P. G. Nichols, U. S. N., Marine Superintendent, Marine Division.
E. C. Lombard, Executive Secretary, Executive Department.
Col. Howard Ker, U. S. A., Assistant Engineer, of Maintenance.
Capt. Joseph L. Bird, U. S. N., Superintendent, Mechanical Division.
L. W. Lewis, Chief Quartermaster, Supply Department.
Arnold Bruckner, Director of Finance, Department of Finance.
Maj. Gen. George W. Rice, U. S. A., Chief Health Officer, Health Department.
B. F. Burdick, Chief of Washington Office and General Purchasing Officer.

Panama Railroad Company

Brig. Gen. F. K. Newcomer, U. S. A., President.
Vacant, Second Vice President.
A. L. Prather, General Manager.

(NEW YORK OFFICE)

W. R. Pfizer, Vice President.
J. C. Hughes, Secretary.
W. L. Hall, Treasurer.

¹ The office of Engineer of Maintenance was vacant on June 30, 1949, the appointment of Colonel Vogel having been made effective July 1, 1949.

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REPORTS OF HEADS OF DEPARTMENTS AND DIVISIONS

Appendixes Not Printed

The material in the annual report of the Governor of The Panama Canal, published in this volume, is to a large extent a summary of the data presented in the annual reports from the heads of departments and divisions in the Canal organization; the latter, regarded as appendixes to the report of the Governor, are not printed. The annual reports of the Panama Railroad Company and the Health Department are published separately; the latter is compiled for calendar years only. The reports of the heads of departments and divisions, as listed below, are on file at the Washington Office of The Panama Canal and at the office of the Governor at Balboa Heights, C. Z.

Engineer of maintenance, report of.

Dredging division, report of superintendent.

Plans section, report of chief.

Safety section, report of safety engineer.

Special engineering division, report of supervising engineer.

Assistant engineer of maintenance, report of.

Electrical division, report of electrical engineer.

Locks division, report of superintendent.

Meteorology and hydrography, section of, report of chief hydrographer.

Municipal engineering division, report of municipal engineer.

Office engineering division, report of acting office engineer.

Department of Finance, report of director of finance.

Marine division, report of marine superintendent.

Mechanical division, report of superintendent.

Supply department, report of chief quartermaster.

Executive department:

Civil affairs, division of, report of chief.

Clubhouses, Panama Canal, report of director.

General counsel, report of.

License bureau, report of chief.

Pay-roll bureau, report of chief.

Personnel supervision and management, division of, report of director of personnel.

Police and fire division, report of acting chief.

Schools, division of, report of acting superintendent.

Surveying officer (acting), report of.

Aeronautics section, report of chief.

Magistrates' courts:

Magistrate:

Cristobal, report of.

Balboa, report of.

Pardon board, report of chairman.

Public defender (acting), report of.

Washington office, report of chief of office and general purchasing officer.

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ANNUAL REPORT OF THE GOVERNOR OF THE PANAMA CANAL

INTRODUCTION

The Panama Canal is a lock-type canal that connects the Atlantic and Pacific Oceans through the Isthmus of Panama, traversing a distance of approximately 51 miles from deep water to deep water. In the dredged channel, the Canal has a minimum width of 300 feet and a minimum depth of 42 feet. The greater part of the Canal channel is at the level of Gatun Lake, the surface of which is 85 feet above sea level. In transiting the Canal a ship is raised in three steps or lockages to the level of Gatun Lake and subsequently lowered in three steps to sea level at the other side of the Isthmus. Each of the twin chambers in each flight of locks has a usable length of 1,000 feet and width of 110 feet, and is about 70 feet deep. The flights are in duplicate, enabling ships to be passed in opposite directions simultaneously.

Generally speaking, the Canal Zone comprises a strip of land extending 5 miles on either side of the center line of the Canal channel and three marine miles beyond low-water mark in the Atlantic and Pacific Oceans. The Canal Zone includes also such areas outside of the 5-mile limits as are covered by the waters of Gatun and Madden Lakes and the lands immediately adjacent to these lakes which are below the 100-foot and 260-foot contour lines, respectively, referred to mean sea level. The use, occupation, and control of the Canal Zone have been granted to the United States Government by the Republic of Panama, under treaty agreements, for the construction, maintenance, operation, sanitation, and protection of the Canal enterprise, and the Republic has further granted to the United States all rights, power, and authority within the Canal Zone which the United States would possess and exercise if it were sovereign of the territory.

The organization for the operation and maintenance of the Canal and the government of the Canal Zone was established by the President in conformity with the Panama Canal Act of August 24, 1912. Authority is vested in a Governor as head of the organization known

as The Panama Canal. The Governor is also president of the Panama Railroad Company, an adjunct of the Canal enterprise organized as a United States Government corporation. The Panama Canal organization is an independent establishment in the Government service, directly under the President, but as a matter of executive arrangement, the Secretary of the Army represents the President in the administration of Canal affairs.

Administration of the affairs of The Panama Canal enterprise involves three main elements: (a) Operation and maintenance of the Canal itself; (b) operation of the auxiliary enterprises, including the Panama Railroad, necessary to provide adequately for the needs of shipping and of the Canal operating forces; and (c) government of the Canal Zone, populated largely by employees and personnel of the armed forces, together with the families of these groups. The immediate supervision of the administration of these various activities rests with the heads of the nine major departments and divisions of The Panama Canal and the Panama Railroad Company.

In addition to the foregoing, a coordinated organization is maintained in the Canal Zone by the United States Army, the United States Navy, and the United States Air Force, under the over-all command of the Commander in Chief, Caribbean. The United States Department of Justice also maintains a district court in the Canal Zone, with a district judge, a district attorney, and various judicial and other officials independent of The Panama Canal organization.

By Executive order of September 5, 1939, the provisions of section 13 of the Panama Canal Act, approved August 24, 1912, were invoked as an emergency measure, and since that date the commanding general for this area has exercised final authority over the operation of the Panama Canal and all its adjuncts, appendants, and appurtenances, including control and government of the Canal Zone; and the Governor of The Panama Canal has been subject to that authority and the orders issued under it.

Operation and Maintenance of the Canal

The primary function of The Panama Canal is to provide and maintain a waterway by means of which vessels may make the transit from one ocean to the other, and to handle such traffic as presents itself for transit with a maximum of safety and a minimum of delay. Essentially this involves the maintenance of the waterway, the operation of the locks, and the control of traffic through the Canal. Throughout the year the Canal force maintained its high standard for expeditious service not only in the actual transiting of ships but in providing emergency repairs, fuel, supplies, and the various supple-

mentary services incidental to shipping. There were no interruptions of ship traffic during the year.

Operation of Auxiliary Enterprises—Business Operations

Second only to the operation of the Canal is the function of supplying necessary services to shipping and the Canal operating force. These services are provided under coordinated and centralized control by the various business units of The Panama Canal and Panama Railroad Company and include oil and coal bunkering plants; storehouses for food, ship chandlery, and other essential supplies; marine repair shops; harbor terminal facilities for passengers and for handling and transshipping cargo; a railroad line across the Isthmus; a steamship line between New York and the Canal Zone; water and electric power systems; and living quarters and retail commissary stores for the operating force.

Government—Administration

The usual functions of government, such as schools, police and fire protection, quarantine, public health, immigration service, posts, customs, aids to navigation, steamboat inspection, hydrographic and meteorological work, water supply, sewers, construction and maintenance of streets, and similar activities, which, in the United States are directed by various officers of the National, State, and municipal governments, are entrusted in the Canal Zone to the Governor, and are executed under his authority and responsibility. This centralization of all governmental activities under one head is essential to economical and efficient administration.

Services Rendered to Shipping by the Panama Canal

The principal services rendered to shipping by the Canal and its adjuncts are shown in the following table, which presents a comparison of the activities during the fiscal year 1949 with the 2 years immediately preceding:

	Fiscal year		
	1949	1948	1947
TRAFFIC THROUGH THE PANAMA CANAL			
Number of vessels transiting the Canal:			
Ocean-going tolls-paying vessels.....	4, 793	4, 678	4, 260
Small tolls-paying vessels (see page 12).....	1, 275	1, 242	847
Total tolls-paying vessels.....	6, 068	5, 920	5, 107
Vessels exempt from payment of tolls (see page 12).....	1, 293	1, 079	1, 265
Total transits.....	7, 361	6, 999	6, 372

	Fiscal year		
	1949	1948	1947
TRAFFIC THROUGH THE PANAMA CANAL—continued			
Tolls levied—ocean-going vessels.....	\$20,541,230	\$19,956,593	\$17,596,602
Tolls levied—small vessels.....	\$76,405	\$60,846	\$37,759
Total tolls.....	\$20,617,635	\$20,017,439	\$17,634,361
Value of tolls on vessels subject to free transit.....	\$2,487,791	\$1,824,321	\$2,305,787
Cargo passed through Canal, carried by:	<i>Tons</i>	<i>Tons</i>	<i>Tons</i>
Ocean-going tolls-paying vessels.....	25,305,158	24,117,788	21,670,518
Small tolls-paying vessels.....	31,975	25,690	16,299
Vessels exempt from payment of tolls.....	2,245,455	1,520,727	1,001,608
Total cargo.....	27,582,588	25,664,205	22,688,425
Net tonnage (Panama Canal measurement) of ocean-going tolls-paying vessels.....	23,473,236	22,902,064	20,233,043
Cargo per Panama Canal net vessel ton (laden ocean-going tolls-paying vessels only).....	1.270	1.263	1.305
Average tolls per ton of cargo (laden ocean-going tolls-paying vessels only).....	\$0.708	\$0.713	\$0.689
OTHER SERVICES			
Calls at Canal Zone ports by ships not transiting the Canal.....	1,219	1,176	826
Cargo handled and transferred at ports (tons).....	1,189,266	1,297,963	1,492,931
Coal sales to ships (tons).....	15,563	18,560	28,989
Coal—number of vessels bunkered.....	36	53	102
Fuel oil—total barrels pumped (both incoming and outgoing), excluding Panama Canal use.....	10,389,753	11,697,918	9,995,865
Fuel oil—number of vessels handled.....	2,328	2,037	2,089
Repairs to ships other than Panama Canal equipment:			
Number of vessels repaired.....	1,135	1,467	1,587
Number of vessels dry docked.....	100	130	205
Sales to ships (except U. S. Army and Navy):			
Provisions (commissary sales).....	\$1,029,970	\$1,244,759	\$1,221,529
Chandlery (storehouse sales).....	\$199,301	\$306,241	\$168,485

Net Revenues

During the fiscal year 1949 the revenues from tolls charged to shipping using the Canal were \$20,612,042.88 and miscellaneous receipts amounted to \$132,867.90, a total of \$20,744,910.78. The net appropriation expenses were \$21,217,495.11, resulting in a net deficit of \$472,584.33. This net deficit was caused primarily by increased operating expenses while tolls rates remained unchanged. The business operations under The Panama Canal produced a net revenue of \$1,006,959.04. Thus a net revenue of \$534,374.71 was derived from the combined operations of the Canal and its business units during the fiscal year 1949, as compared with a net revenue of \$2,622,675.75 in the fiscal year 1948.

Replacements

The past fiscal year marked the close of 35 years of successful operation of The Panama Canal. A very important factor contributing to this creditable record is the care that has been taken to maintain all parts of the Canal structures and equipment in good operating condition.

The total capital value of The Panama Canal as of June 30, 1949, was \$721,907,811, which includes \$138,901,259 in special item projects and additional facilities, \$396,380,372 in nondepreciable property such as locks, dams, and other concrete structures, and \$186,626,180 in depreciable property. Against this investment in depreciable property is an accrued depreciation of \$58,859,595.

The special item projects, additional facilities, and the nondepreciable property require but little expenditure for upkeep. However, the depreciable property requires systematic and orderly replacement as its economic life is exhausted, and appropriations must be made by Congress for this purpose, as well as for the construction of new facilities as need therefor develops.

Section I

CANAL OPERATION AND TRADE VIA THE PANAMA CANAL

STATISTICS ON CANAL TRAFFIC

Ocean-Going Tolls-Paying Traffic

Although Canal traffic ¹ was considerably curtailed by the long-shoremen's strike in the United States during the early months of the fiscal year 1949, small increases were recorded in the principal features of Canal traffic, in comparison with the preceding fiscal year. Thus, traffic in 1949 was the best since the end of World War II, and increased to about 90 percent of 1935-39 average.

The following is a tabulation of four of the principal features of this traffic for the fiscal year 1949, together with those in the two fiscal years immediately preceding:

	Fiscal year		
	1949	1948	1947
Number of transits.....	4,793	4,678	4,260
Net tonnage (Panama Canal measurement).....	23,473,236	22,902,064	20,233,043
Cargo (tons of 2,240 pounds).....	25,305,158	24,117,788	21,670,518
Tolls.....	\$20,541,230	\$19,956,593	\$17,596,602

Other Traffic

In addition to the 4,793 ocean-going tolls-paying vessels passing through the Canal in the fiscal year 1949, there were 1,275 tolls-paying vessels under 300 net tons, Panama Canal measurement (consisting principally of small banana boats operating in local waters), and 1,293 transits of vessels exempt from the payment of tolls, a total of 7,361 transits for 1949, in comparison with a total of 6,999 in the fiscal year 1948 and a total of 6,372 in the fiscal year 1947. The Panama Canal does not compile detailed statistics on small tolls-paying

¹ Vessels of 300 net tons and over (Panama Canal measurement) for vessels rated on net tonnage, or of 500 tons displacement and over for vessels rated on displacement tonnage (naval vessels, dredges, etc.).

vessels nor on vessels which transit the Canal without payment of tolls; hence, except for the sections appearing under the captions "Small Tolls-Paying Vessels Transiting Canal" and "Vessels Transiting Canal Without Payment of Tolls" on pages 12 and 13, the following paragraphs pertain only to ocean-going tolls-paying traffic.

Trends in the Movement of Cargo

The combined movement of cargo in both directions in the fiscal year 1949 totaled 25,305,158 long tons, a gain of 1,187,370 tons, or 4.9 percent, in comparison with the tonnage passing through in the fiscal year 1948. This increase in the combined movement was due wholly to greater shipments from the Atlantic to the Pacific which advanced from 8,679,140 tons in 1948 to 9,899,088 tons in 1949, a gain of 14.1 percent. From the Pacific to the Atlantic the tonnage in 1949 and 1948 was substantially the same—15,406,070 tons in 1949 as against 15,438,522 tons in 1948.

Atlantic to Pacific.—An analysis of the Pacific-bound tonnage moving in the principal routes of trade reveals that the greatest increase occurred in the tonnage moving from eastern United States to Asia, this movement advancing from 2,210,510 tons in 1948 to 3,100,599 tons in 1949, a gain of 40.3 percent. This important gain was the direct result of the heavy movement to Japan of coal which totaled over a million tons in 1949 in comparison with but 11,706 tons in 1948. Shipments from the east coast United States to Australasia, amounting to 759,498 tons, and from Europe to Australasia, totaling 554,437 tons, improved over the fiscal year 1948, showing gains of 26.1 percent and 34.0 percent, respectively. In the more important trades which showed decreases in comparison with 1948, the Pacific-bound movement in the United States intercoastal trade dropped from 1,719,005 tons in 1948 to 1,449,561 tons in 1949, a loss of 15.7 percent. The curtailment in the movement in United States intercoastal trade was largely the result of the maritime strike which paralyzed shipping for about 3 months on the Pacific coast of the United States. Cargo routed from eastern United States to the west coast South America dropped from 886,235 tons in 1948 to 860,376 tons in 1949, and that from the West Indies to the west coast South America decreased from 829,496 tons in 1948 to 752,264 tons in 1949, declines of 3.0 percent and 9.3 percent, respectively.

Pacific to Atlantic.—While the total tonnage from the Pacific to the Atlantic in 1949 was substantially equal to that moving in that direction in 1948, a number of significant changes occurred in the various routings of cargo. An outstanding gain in comparison with the preceding year was recorded in cargo routed from the west coast South America to the east coast United States which increased from

3,416,518 tons in 1948 to 4,387,317 tons in 1949, a gain of 28.4 percent. (NOTE.—A gain of over a million tons in shipment of iron ore from Chile is reflected in this over-all increase.) In other trades contributing important tonnage to Canal traffic, the following gains also were recorded: Asia to the east coast United States with 1,688,654 tons, 113.4 percent; west coast South America to Europe, with 1,130,194 tons, 3.2 percent; and Australasia to Europe, with 1,198,932 tons, 14.8 percent. In contrast to these gains was the diminished volume recorded in three trades which rank high in Canal traffic, namely, the United States intercoastal trade which decreased from 2,118,799 tons in 1948 to 1,641,157 tons in 1949, a loss of 22.5 percent; west coast United States to Europe, which declined from 1,953,195 tons in 1948 to 794,491 tons in 1949, a loss of 59.3 percent; and west coast Canada to Europe which dropped from 2,482,088 tons in 1948 to 1,787,646 tons in 1949, a loss of 28.0 percent.

Cargo Statistics

In tables Nos. 39 through 42, in section V, will be found a comparison of cargo tonnage shipped over the various trade routes, together with summaries of the principal commodities comprising these shipments.

Tolls Receipts

The receipts from tolls reported to the United States Treasury for the fiscal year 1949 were \$20,612,042.88. This figure includes tolls amounting to \$76,405.06 on local tolls-paying vessels which are not included in Canal statistics covering ocean-going tolls-paying traffic. The receipts reported to the United States Treasury, moreover, reflect adjustments totaling \$5,591.70 on vessels transiting in the previous year. These two items account for the difference of \$70,813.36 between the tolls receipts reported to the Treasury and the tolls of \$20,541,229.52 shown in the traffic studies in this report.

Nationality of Vessels Transiting Canal

Thirty flags were represented in the ocean-going tolls-paying traffic passing through the Canal in the fiscal year 1949, in comparison with 33 in the previous fiscal year. Vessels of United States registry, accounting for 10,591,754 net tons, Panama Canal measurement, ranked first in the volume of net tonnage, while those of British registry, with 5,289,215 net tons, Panama Canal measurement, were second. As in former years, vessels of the United States and Great Britain made up the greater part of the traffic, comprising in 1949 45.1 percent and 22.5 percent, respectively, of the total net tonnage. The nationalities next in order were Norwegian, with 8.5 percent of

the total, followed by Panamanian, Swedish, and Honduran, each with a little more than 3 percent.

Further particulars on traffic by nationality will be found in table No. 31, section V.

Average Tonnage, Tolls, and Tons of Cargo per Cargo-Carrying Vessel

The average measurement tonnage, tolls, and tons of cargo per cargo-carrying vessel of 300 net tons and over, Panama Canal measurement, transiting the Panama Canal during the past three fiscal years are shown in the following tabulation:

Feature	Fiscal year		
	1949	1948	1947
Measured tonnage:			
Panama Canal net.....	4,936	4,930	4,799
Registered gross.....	6,675	6,679	6,531
Registered net.....	3,965	3,994	3,902
Tolls.....	\$4,310	\$4,296	\$4,165
Tons of cargo (including vessels in ballast).....	5,338	5,197	5,148
Toas of cargo (laden vessels only).....	6,432	6,330	6,318

NOTE.—Computation of above averages is based on vessels engaged in normal commerce; craft such as yachts, naval vessels, etc., are not considered.

Steam, Motor, and Other Vessels

The following table shows ocean-going tolls-paying vessels transiting the Canal during the past three fiscal years, segregated according to method of propulsion:

	Fiscal year		
	1949	1948	1947
Steamers:			
Oil burning.....	3,164	3,155	2,926
Coal burning.....	89	136	256
Motorships.....	1,488	1,350	1,027
Not classified ¹	52	37	51
Total.....	4,793	4,678	4,260

¹ Naval vessels, yachts, etc.

Frequency of Transits of Vessels Through the Panama Canal

During the fiscal year 1949, 1,442 individual ocean-going tolls-paying vessels, representing 30 nationalities, passed through the Panama Canal. In aggregate these vessels made a total of 4,793 transits. The number of transits made by individual ships varied from 1 to 36, and averaged 3.32. The greatest number of transits,

36, was made by the *Moshill*, a vessel of Norwegian registry, engaged in the trade between Gulf ports of the United States and South America.

Vessels of United States registry led in the number of individual vessels transiting the Canal during the year with 469, as well as in the number of transits, 1,970; those of the British registry were second in number of both individual vessels and of transits, with 420 and 915, respectively.

Further information on the frequency of transits of vessels will be found in table No. 34, section V.

Gross Tonnage of Vessels

The 4,793 ocean-going tolls-paying vessels which transited the Canal in the fiscal year 1949 included 4,771 vessels rated on net tonnage and 22 vessels rated on displacement tonnage.

Of the 4,771 vessels rated on net tonnage, 2,020, or 42.3 percent, were vessels ranging between 6,000 and 8,000 registered gross tons. The average registered gross tonnage of all vessels was 6,650 as compared with 6,654 in the previous fiscal year.

Further information on gross tonnage of vessels will be found in table No. 35, section V.

Principal Commodities

Statistics on commodities passing through the Panama Canal are not precise because at the time of transit it is not required that complete manifests of cargo carried by vessels be submitted to the Canal authorities. In lieu of a manifest the master of each vessel is required to submit a cargo declaration, which is a briefly itemized statement, listing the principal items of cargo carried and showing their ports or country of origin and destination. These cargo declarations form the basis of the commodity statistics. There is a natural tendency not to list small miscellaneous shipments but to include them under the head of general cargo. Hence, except in the case of commodities commonly shipped in bulk, such as mineral oils carried in tank ships, wheat, lumber, nitrate, etc., aggregate shipments of the various commodities are likely to be in excess of the tonnage reported during the year and shown in the annual summary. Hence, all commodity statistics carried in this report are subject to inaccuracies arising from this source.

The commodity of the greatest volume passing through the Canal from the Atlantic to the Pacific in the fiscal year 1949 was mineral oil, totaling 2,186,777 tons, followed by coal and coke, with 1,173,893 tons,

and manufactured iron and steel products, with 1,163,779 tons. In the movement from the Pacific to the Atlantic, commodities exceeding a million tons included ores (various), with 4,028,279 tons; lumber, with 2,005,669 tons; nitrate, with 1,445,982 tons; and wheat, with 1,127,581 tons.

For details on principal commodities passing through the Canal, see table No. 36, section V.

Ocean Passenger Traffic

The following tabulation shows by month the number of passengers, exclusive of transients, disembarking and embarking from vessels at Canal Zone ports during the fiscal year 1949, segregated between first class and all others, with comparative totals for the fiscal years 1948 and 1947:

	Passengers disembarking			Passengers embarking		
	First class	Others	Total	First class	Others	Total
July.....	1,261	48	1,309	1,599	36	1,635
August.....	1,571	186	1,757	1,938	213	2,151
September.....	1,374	38	1,412	1,303	201	1,504
October.....	1,451	194	1,645	1,334	51	1,385
November.....	1,072	49	1,121	697	228	925
December.....	964	167	1,131	720	32	752
January.....	1,266	312	1,578	791	166	957
February.....	855	123	978	820	153	973
March.....	731	47	778	1,128	193	1,321
April.....	923	999	1,922	1,418	147	1,565
May.....	935	69	1,004	1,634	123	1,757
June.....	1,224	43	1,267	2,203	203	2,406
Total:						
1949.....	13,627	2,275	15,902	15,585	1,746	17,331
1948.....	12,302	578	12,880	12,381	1,402	13,783
1947.....	9,147	859	10,006	9,066	3,504	12,570

The following table shows the passenger traffic through the ports of Cristobal and Balboa during the fiscal years 1949, 1948, and 1947:

	Port of Cristobal			Port of Balboa		
	1949	1948	1947	1949	1948	1947
Passengers disembarking.....	12,716	12,001	9,295	3,186	879	711
Passengers embarking.....	13,534	11,390	8,799	3,797	2,393	3,771

A further segregation of the passenger movement for 1949 shows that 13,304 incoming and 15,478 outgoing passengers came from or were destined to ports on the Atlantic, and 2,598 incoming and 1,853 outgoing passengers were brought from or were destined to ports on the Pacific.

Transient Passengers

In addition to the figures shown in the foregoing table covering passengers disembarking and embarking, there were 59,914 transient passengers brought to the Isthmus by vessels calling at Canal ports during the fiscal year 1949. The 1949 figure is an increase of 19,362 (47.7 percent) over the number recorded in 1948, and more than double the number passing through in the fiscal year 1947.

The origin and destination of these transient passengers are indicated in the following tabulation:

	Fiscal year		
	1949	1948	1947
Remaining on board vessels transiting Canal:			
Atlantic to Pacific.....	23, 220	21, 099	15, 694
Pacific to Atlantic.....	22, 947	11, 273	13, 019
Remaining on board vessels entering port but not transiting Canal:			
Atlantic to Atlantic.....	13, 619	7, 875	868
Pacific to Pacific.....	128	305	104
Total.....	59, 914	40, 552	29, 689

Small Tolls-Paying Vessels Transiting Canal

Transits of small cargo-carrying vessels and other miscellaneous craft of less than 300 net tons (Panama Canal measurement) or 500 displacement tons (for vessels rated on displacement tonnage) are excluded from statistics on ocean-going tolls-paying traffic, although the vessels are not exempt from the payment of tolls. Transits of these small vessels during 1949, 1948, and 1947 together with the tonnage, tolls, and the amount of cargo carried, are summarized in the following table:

	Fiscal year 1949			Total, fiscal year	
	Atlantic to Pacific	Pacific to Atlantic	Total	1948	1947
Number of transits:					
Rated on net tonnage.....	616	658	1, 274	1, 242	847
Rated on displacement tonnage.....	1		1		
Total transits.....	617	658	1, 275	1, 242	847
Panama Canal net tonnage.....	45, 667	48, 830	94, 497	76, 258	47, 580
Displacement tonnage.....	371		371		
Tolls.....	\$33, 755. 50	\$42, 649. 56	\$76, 405. 06	\$60, 846. 12	\$37, 758. 78
Cargo (tons).....	3, 160	28, 815	31, 975	25, 690	16, 299

Vessels Transiting Canal Without Payment of Tolls

The following classes of vessels are entitled to free passage of the Panama Canal: Vessels owned, operated or chartered by the Govern-

ments of the United States and Republic of Panama; war vessels of the Republic of Colombia; and vessels transiting solely for the purpose of having repairs made at the Panama Canal shops. Such vessels are not included in the general statistics pertaining to Canal traffic.

The following table shows for the fiscal year 1949 the number of transits in each category outlined in the preceding paragraph, and the amount of tolls to which such vessels would have been subject at the prescribed rates if tolls had been charged against them.

Category	Number of transits	Value of tolls
Government of:		
United States.....	1,265	\$2,461,617
Colombia.....	21	15,444
Panama.....	3	21
Transiting for repairs.....	4	10,710
Total.....	1,293	2,487,792

Further details on vessels transiting the Canal without payment of tolls will be found in table No. 43, section V.

Revision of Rates of Toll

In the Governor's report for the fiscal year 1948 it was reported that the President of the United States, by Proclamation No. 2775, signed March 26, 1948, prescribed for the Panama Canal a revised schedule of rates of toll, effective October 1, 1948. On September 7, 1948, the President issued a proclamation (No. 2808) which postponed until April 1, 1949, the effective date of Proclamation No. 2775, and on March 12, 1949, the President issued Proclamation No. 2831 which further postponed the effective date of Proclamation No. 2775 until September 1, 1949.

The issuance of the latter proclamation followed the adoption on February 28, 1949, of House Resolution No. 44, Eighty-first Congress, first session, in which the Committee on Merchant Marine and Fisheries (1) is authorized to make a full and complete study and analysis of the financial operation of The Panama Canal and to recommend to the Congress concerning what elements of cost should be properly used in the future as a basis of a policy to be followed in establishing and levying tolls for the use of the Panama Canal for transit purposes, and (2) is directed to report its findings, together with its recommendations for such legislation as it may deem advisable, to the House of Representatives at the earliest practicable date, but not later than June 30, 1949. On June 9, 1949, House Resolution (No. 245) was adopted, extending to September 1, 1949, the time for filing the report.

CANAL OPERATION AND MAINTENANCE

Hours of Operation

Dispatching of ships through the Canal is conducted on schedules. Vessels awaiting transit begin moving through the Canal from the terminal ports at 6 a. m. and dispatches are made thereafter from each terminus at intervals of from $\frac{1}{2}$ to 1 hour. The following is a summary of normal arrangements in effect at the end of the fiscal year.

From Cristobal harbor, first ship at 6 a. m., last at about 3 p. m.; from Balboa anchorage, first ship at 6 a. m., last at 3:30 p. m.

Tankers and vessels carrying hazardous cargoes are dispatched at the discretion of the port captain and normally are not permitted to proceed unless that can clear Gaillard Cut before dark.

Lockages and Lock Maintenance

Operating Schedule of Locks

Three operating crews were maintained at Gatun and Miraflores Locks and two crews were maintained at Pedro Miguel Locks throughout the year. Additional crews were assigned during the year as were required to expedite the transit of ships. The following operating schedules were in effect at the Locks on June 30, 1949:

Gatun:

Shift No. 1: 7 a. m. to 3 p. m.—8 locomotives.

Shift No. 1X: 10 a. m. to 6 p. m.—8 locomotives.

Shift No. 2: 3 a. m. to 11 p. m.—8 locomotives.

Pedro Miguel:

Shift No. 1: 8 a. m. to 4 p. m.—8 locomotives.

Shift No. 2: 1:30 p. m. to 9:30 p. m.—8 locomotives.

Miraflores:

Shift No. 1: 7 a. m. to 3 p. m.—8 locomotives.

Shift No. 2: 9:30 a. m. to 5:30 p. m.—8 locomotives.

Shift No. 3: 3 p. m. to 11 p. m.—8 locomotives.

Lockages

The number of lockages and vessels handled (including Panama Canal vessels) is shown in the following table, by months, for the fiscal year 1949, with corresponding totals for the previous 5 years:

	Gatun		Pedro Miguel		Miraflres	
	Lockages	Vessels	Lockages	Vessels	Lockages	Vessels
<i>1948</i>						
July.....	445	629	468	680	474	691
August.....	457	617	473	638	477	649
September.....	450	626	475	682	477	698
October.....	430	597	445	598	444	615
November.....	401	537	416	534	416	525
December.....	415	580	430	576	429	573
<i>1949</i>						
January.....	456	616	473	623	473	628
February.....	412	559	433	625	433	630
March.....	494	699	520	771	513	744
April.....	479	687	505	749	513	740
May.....	468	673	500	699	495	697
June.....	464	680	478	688	479	700
Total.....	5,371	7,500	5,616	7,863	5,623	7,890
Fiscal year:						
1944.....	3,267	5,846	4,036	7,632	3,656	6,424
1945.....	5,261	9,201	6,268	12,334	5,635	10,097
1946.....	6,823	9,901	7,139	10,654	7,076	10,561
1947.....	4,858	6,674	5,155	7,281	5,084	7,221
1948.....	5,197	7,093	5,422	7,578	5,367	7,574

Total lockages for the three locks were 3.9 percent above the number handled during the previous year. All chambers were available for service throughout the year. A water saving program using short chamber lockages was started on December 31, 1948, at the Pacific locks and on January 3, 1949, at the Atlantic locks; this procedure was discontinued at all locks on May 16, 1949.

The average number of lockages made daily and the average number of vessels handled per lockage during each of the past five fiscal years are shown in the following tabulation:

Fiscal year	Average number of lockages per day			Average number of vessels per lockage		
	Gatun	Pedro Miguel	Miraflres	Gatun	Pedro Miguel	Miraflres
1945.....	14.4	17.1	15.4	1.74	1.96	1.79
1946.....	18.7	19.5	19.4	1.45	1.49	1.49
1947.....	13.3	14.1	13.9	1.37	1.41	1.42
1948.....	14.2	14.8	14.6	1.36	1.40	1.41
1949.....	14.7	15.3	15.4	1.40	1.40	1.40

Delays to Shipping

The lock operating machinery functioned smoothly throughout the year except for a few incidents of faulty operation or minor failures of

equipment. The following summary includes all delays to vessels while transiting the locks due to the incidents mentioned.

	Number of lockages delayed	Aggregate delay caused all vessels
Gatun.....	28	5 hours 3 minutes.
Pedro Miguel.....	13	4 hours 16 minutes.
Miraflores.....	31	4 hours 17 minutes.
Total.....	72	13 hours 36 minutes.

Maintenance and Construction

Regular inspection and maintenance were continued for all locks machinery and equipment. Routine tests and inspection were regularly carried out with a view to detecting weak points and potential failures before break-downs occurred. Where inspection and test indicated that a mechanical or electrical part or device was in need of replacement or repair, appropriate action was taken by the operation and maintenance forces of the locks.

The study for the modernization of the electrical power and distribution system for all locks, begun during the fiscal year 1946, was continued. Requisitions have been placed for the purchase in the United States of a large part of the material and equipment required at the Pacific locks, including primary cable, power and lighting transformers, and secondary switchgear. Construction of eight new above-ground distribution houses on the wing walls is near completion, and that of primary ducts has been started. Work on this project at the Atlantic locks was confined to study and designs.

Construction and erection by the mechanical division of three of the six new towing locomotives proposed for the Pacific locks is well advanced, and delivery to the locks division for wiring and installation of electrical equipment is expected to begin within the next 6 months. The new locomotives will incorporate a number of important improvements from existing equipment.

Power for Canal Operation

The following table summarizes and gives pertinent data relative to the electric power generated by the power system of The Panama Canal for the past three fiscal years:

[Kilowatt-hours]

	Fiscal year		
	1949	1948	1947
Gross power generated:			
Gatun hydro station.....	99,534,100	103,912,400	88,577,400
Madden hydro station.....	149,214,900	143,874,700	151,581,000
Diesel stations.....	21,670,200	17,771,300	10,611,600
Total generated.....	270,419,200	265,558,400	250,770,000
Consumed in station service.....	2,799,235	2,647,448	2,478,571
Net generator output.....	267,619,965	262,910,952	248,291,429
Distributed to consumers.....	241,325,061	235,682,203	222,126,106
Transmission loss:			
Kilowatt-hour.....	26,294,904	1 27,228,749	26,165,323
Percent.....	9.7	1 10.2	10.5
Peak load (kilowatts).....	48,900	47,800	46,500
Date.....	Jan. 10, 1949	Mar. 8, 1948	Feb. 14, 1947

¹ Corrected figures.

During the fiscal year 1949, Nos. 1 and 3 generating units at the Gatun hydroelectric station were overhauled and repairs were made to the No. 4 generating unit.

The rehabilitation of the Balboa substation was begun during the year. The principal features of this work consisted of the replacement of worn-out equipment and the overhaul of other equipment and machinery. The erection of a new 44,000/11,000-volt outdoor substation at the rear of the present station was in progress at the close of the fiscal year.

At the Gamboa substation a new 3,000 kilovolt-amperes transformer was installed to relieve the overload on the 2,000 kilovolt-amperes transformer presently in use. This installation was practically complete at the end of the year.

The complete disassembly, cleaning, adjustment and reassembly of all drum gate differential valves and adjustment of needle valves were completed at Madden Dam during the year.

Service was temporarily interrupted at various substations on seven occasions. There were 40 transmission line failures during the year, of which 3 were caused by lighting flash-over, 2 by line wire breaks, 2 by mechanical failure of an insulator string, 1 by an insulator flash-over, 1 by cable pothead flash-over, 1 by a tree falling on line, 1 by ground-wire break, 11 by animal contact, 4 by faulty operation of protective relays, and 14 by unknown causes.

Water Supply and General Weather Conditions

Water Supply

The water requirements of The Panama Canal for hydroelectric power, lockages, and municipal use are supplied by Madden and Gatun Lakes, which serve as storage reservoirs for a drainage area of 1,285 square miles. All outflow from Madden Lake, whether spilled at Madden Dam or drawn for the use of the Madden hydroelectric station, flows into Gatun Lake, and, together with the direct inflow from the area downstream from Madden Dam, is available for Gatun Lake uses. The total inflow into Madden and Gatun Lakes during the year ended June 30, 1949, amounted to 165,194 million cubic feet, which is 20 percent below the average inflow for the 35 years since the formation of Gatun Lake. Evaporation losses from Madden and Gatun Lakes totaled 22,374 million cubic feet, leaving 142,820 million cubic feet available for use.

For further details on water supply and expenditures, see table No. 44, section V.

STORMS AND FLOODS.—No storms occurred during the year with wind velocities high enough to cause any material damage to Canal structures. There were no rainstorms of sufficient duration or extent to produce a general flood on Madden or Gatun Lakes. The maximum discharge from Madden Dam during the year was 39,638 cubic feet per second on November 15, 1948. Gatun spillway was operated frequently during the 2-week period November 14–29, 1948, with a maximum discharge of 34,779 cubic feet per second on November 28, 1948.

DRY SEASON, 1949.—The 1949 dry season was considerably longer and drier than normal. The period during which the flow into Madden and Gatun Lakes was not sufficient to provide water for evaporation losses from lake surfaces and for Panama Canal uses extended from December 11, 1948, to May 24, 1949, a total of 165 days. The total inflow into Madden and Gatun Lakes during this period was 23,076 million cubic feet. Water expenditures for the same period amounted to 55,253 million cubic feet, consisting of 13,201 million cubic feet evaporation loss from lake surfaces, and Gatun Lake water use of 42,052 million cubic feet. The dry season draft on lake storage amounted to 32,177 million cubic feet, of which 14,985 million cubic feet was drawn from Madden Lake and 17,192 million cubic feet from Gatun Lake.

LAKE ELEVATIONS.—During the fiscal year ended June 30, 1949, Madden Lake varied in elevation between a maximum of 251.69 feet on November 28, 1948, and a minimum of 215.88 feet on May 25, 1949, a total range of 35.81 feet. Gatun Lake varied in elevation

between a maximum of 86.61 feet on December 11, 1948, and a minimum of 81.98 feet on July 1, 1948, a total range of 4.63 feet. Elevations on June 30, 1949, were 232.58 feet for Madden Lake and 83.95 feet for Gatun Lake.

RAINFALL.—The rainfall in the Canal Zone during the fiscal year ended June 30, 1949, varied from slightly below normal along the Pacific slope to a well-marked deficiency in the interior and along the Atlantic coast. Along the line of the Canal channel, annual totals ranged from a minimum of 64.75 inches at Balboa Heights near the Pacific terminal to a maximum of 108.22 inches at Cristobal near the Atlantic terminal, 4.29 inches and 21.54 inches below normal, respectively. The month of maximum rainfall was November 1948. The maximum monthly amount recorded during the year was 22.40 inches at Cristobal in November 1948. February was the month of least rainfall, with monthly totals ranging from no measurable amount over the Pacific slope to 1.48 inches at Gatun.

Air Temperatures

There was little variation in air temperatures throughout the year, no monthly mean at any station departing more than 2.5° F. from the annual mean. Annual means and extremes at Canal Zone stations for the fiscal year are given in the following tabulation:

Station	1949 maximum		1949 minimum		1949 mean (° F.)	Departure (° F.)
	° F.	Date	° F.	Date		
Balboa Heights.....	95	May 12, 1949	68	Jan. 15, 1949	80.3	0
Madden Dam.....	97	Apr. 4, 1949	63	Jan. 15, 1949	79.9	+1.0
Cristobal.....	90	Sept. 20, 1948	70	Oct. 7, 1948	79.9	-0.9

Annual extremes and means on record at the above stations are as follows:

Station	Absolute maximum		Absolute minimum		Annual mean
	° F.	Date	° F.	Date	
Balboa Heights.....	97	Apr. 27, 1948	63	Jan. 27, 1910	80.3
Madden Dam.....	98	Apr. 13, 1920	59	Feb. 4, 1924	78.9
Cristobal.....	95	Oct. 18, 1924	66	Dec. 3, 1909	80.8

Winds and Humidity

Wind velocities for the year averaged 6 miles per hour at Balboa Heights on the Pacific coast and 10 miles per hour at Cristobal on the Atlantic coast. Monthly mean velocities at Balboa Heights ranged from 4 miles per hour in October to 10 miles per hour in February. Monthly mean velocities at Cristobal ranged from 5 miles per hour in

October to 16 miles per hour in February. The most frequent directions were northwest along the Pacific coast and northeast along the Atlantic coast. Maximum velocities for five minute periods were 33 miles per hour from the south on July 2, 1948, at Balboa Heights and 34 miles per hour from the west on August 15, 1948, at Cristobal.

The relative humidity averaged 83 percent at both Balboa Heights and Cristobal. Monthly means at Balboa Heights ranged from 70 percent in March to 90 percent in October, and at Cristobal, from 75 percent in January to 88 percent in November.

Tides

During the fiscal year ended June 30, 1949, absolute tidal ranges at Canal terminals were 21.7 feet on the Pacific coast and 2.3 feet on the Atlantic coast. At Balboa, the Pacific terminal of the Canal, the following extremes occurred: highest high water 10 feet above mean sea level, lowest low water 11.7 feet below mean sea level, with the greatest range between consecutive tides 20.7 feet. At Cristobal, the Atlantic terminal of the Canal, the following extremes occurred: highest high water 1.33 feet above mean sea level, lowest low water 0.96 foot below mean sea level, with the greatest range between consecutive tides 1.83 feet.

Seismology

Five earthquake shocks were felt by Canal Zone residents during the fiscal year ended June 30, 1949. All were light and caused no damage in the Canal Zone area. The two heaviest, rated in the Canal Zone at Intensity II, occurred on July 28, 1948, at 9:23 a. m. and 10:06 a. m., seventy-fifth meridian time. Their point of origin was on the floor of the Pacific Ocean to the south of Panama near Coiba Island, and about 185 miles from Balboa Heights. A third shock from the same source, rated at intensity I, was felt on July 31, 1948, at 2:05 p. m. Including the three main shocks which were felt in the Canal Zone, the seismographs at Balboa Heights recorded 51 disturbances during the 12-day period July 26 to August 6, 1948, with all indications of having originated in the Coiba Island area. Seismic activity near this island apparently ceased after August 6, and had not recurred up to the end of the fiscal year. Two other shocks, rated at intensity I, were felt during the year, one on October 14, 1948, at 4:07 a. m. and one on March 29, 1949, at 9:01 p. m. Their point of origin is unknown except that they were about 100 miles from Balboa Heights.

Marine Activities

Traffic through the Canal which reflects to a large extent the volume of work performed by the marine division is fully discussed earlier in this report under "Statistics on Canal Traffic."

Harbor Activities

The table following shows the number of vessels handled at docks of the terminal ports of Cristobal and Balboa for the fiscal year 1949 as compared with the two previous years:

	Cristobal, fiscal year			Balboa, fiscal year		
	1949	1948	1947	1949	1948	1947
Number of vessels docked:						
Handling passengers and/or cargo.....	1, 235	1, 147	1, 090	343	358	516
For all other purposes.....	1, 087	1, 073	1, 244	578	621	651
Total.....	2, 322	2, 220	2, 334	921	979	1, 167

Aids to Navigation

On June 30, 1949, there were 751 aids to navigation in service in the Panama Canal and its approaches, maintained by the Aids to Navigation Subdivision and classified as follows: Acetylene gas-operated, 109; electrically operated, 342; unlighted, 300. Included in the above are two automatic acetylene gas-operated lighthouses, located at Morro Puercos and at Jicarita Island on the coast of Panama in the Pacific approach. Two visits were made to these aids during the year for the purpose of inspecting and servicing the equipment.

Accidents to Shipping

The board of local inspectors investigated and reported on 21 accidents to shipping in Canal Zone waters during the fiscal year 1949, a summary of which follows together with a comparison of accidents in the two previous years:

Cause of accident	Fiscal year		
	1949	1948	1947
Collision.....	4	6	4
Ship struck lock wall.....	5	4	6
Ship struck dock.....	5	2	1
Ship struck by lock gate.....	2		
Ship damaged by tug.....		2	1
Ship struck Canal bank.....	2	2	1
Other causes.....	3	4	3
Total.....	21	20	16

Inspections

Complete inspections were made of the hulls, power plants and equipment of 31 American and 21 foreign vessels and certificates of inspection issued. Eighty hulls of commercial, Panama Canal and Panama Railroad vessels were inspected in drydock. Thirty-three steam boilers were inspected and certificates issued. One hundred

and twenty-six air tanks and 30 carbon dioxide fire-extinguishing systems were inspected. Annual inspections were made and certificates of seaworthiness issued to 353 motorboats.

Salvage and Towing

During the fiscal year 1949, the following off-shore work was performed by marine division tugs for private interests:

On July 10, 1948, the tug *Gorgona II* was dispatched to assist the tuna boat *Millie Lou* into the port of Balboa; on July 10-12, 1948, the tug *Arraijan* assisted to the port of Balboa the disabled S. S. *Grandyke*; on August 10-19, 1948, the tug *Taboga* assisted to the port of Balboa the disabled tuna clipper *Queen Victoria*; on October 18-25, 1948, the *Taboga* was dispatched to the aid of the S. S. *Joseph Feuer* which had been disabled at sea, and returned with tow to the port of Balboa; on November 30-December 8, 1948, the tug *Taboga* was dispatched to Corinto, Nicaragua, to assist the M/S *Don Aurelio* which had run aground; on January 31-February 5, 1949, the tug *Taboga* was dispatched to Buenaventura, Colombia, to tow the Colombian Government dredge *Colombia* to Balboa; on March 16-18, 1949, the tug *Cardenas* assisted to the port of Cristobal the disabled S. S. *Amapola*; on May 16-21, 1949, the tug *Taboga* towed the Colombian Government dredge *Colombia* from the port of Balboa to Buenaventura, Colombia; on May 31, 1949, the *Taboga* went to the assistance of the S. S. *Hollybank*, which had run out of coal while en route from Australia to the Canal, and with that vessel in tow arrived at the port of Balboa on June 9, 1949.

Operation of Tugs

The final conversion of the diesel tugs *Taboga*, *Gorgona II*, and *Limon*, which were acquired and placed in service in the previous fiscal year, was completed.

The following statistics summarize the service of tugs used in marine activities (as distinct from dredging) during the past 3 fiscal years:

	Operating hours, fiscal year			Jobs handled, fiscal year		
	1949	1948	1947	1949	1948	1947
Cristobal.....	5, 412	5, 811	5, 708	2, 411	4, 632	4, 788
Balboa.....	3, 708	3, 526	4, 213	2, 490	3, 096	2, 486
Total.....	9, 120	9, 337	9, 921	4, 901	7, 728	7, 274

The above table does not include statistics for tugs which were occasionally borrowed from dredging service to assist vessels during

emergencies. It does include dredging service tugs rented over periods of time and operated under orders of the marine division.

Maintenance of Channel—Other Dredging Activities

Dredges were operated throughout the year on the maintenance of the Canal channel, terminal harbors, and on various special projects. In the fiscal year 1949 the total material excavated amounted to 10,443,700 cubic yards, which is 47 percent greater than the amount removed in the previous fiscal year. A summary of dredging operations and of operating equipment employed for the year will be found in tables No. 45 and 46 in section V.

Ordinary Channel Maintenance—Canal Prism Dredging

ATLANTIC DISTRICT—*Atlantic Entrance*.—A total of 2,194,500 cubic yards of material was removed in maintaining the Atlantic entrance of the Canal. This dredging was performed by the pipe-line suction dredge *Mindi*, which worked a total of 75 days removing 2,194,500 cubic yards of material which consisted of 2,164,500 cubic yards of earth and 30,000 cubic yards of unmined rock.

CENTRAL DISTRICT—*Gatun Lake*.—A total of 2,454,500 cubic yards of material was removed in maintaining the Gatun Lake section of the Canal channel. This dredging was performed by the dipper dredges *Cascadas* and *Paraiso* and the pipe-line suction dredge *Mindi* as follows:

Equipment	Days worked	Yardage dredged		
		Earth	Rock	Total
Cascadas.....	1½	700	700	1,400
Paraiso.....	1½	2,800	—	2,800
Mindi.....	113½	2,361,300	89,000	2,450,300
Total.....	115½	2,364,800	¹ 89,700	2,454,500

¹ Unmined.

Gaillard Cut.—A total of 623,800 cubic yards of material was moved in maintaining Gaillard cut. This dredging was performed by the dipper dredges *Cascadas* and *Paraiso* and the pipe-line suction dredge *Mindi* as follows:

Equipment	Days worked	Yardage dredged		
		Earth	Rock	Total
Cascadas.....	186	369,800	69,100	438,900
Paraiso.....	56¼	104,500	12,400	116,900
Mindi.....	3	60,200	7,800	68,000
Total.....	245¼	534,500	¹ 89,300	623,800

¹ 83,500 cubic yards unmined

Project No. 13.—This project, which consists of widening Culebra Reach by 200 feet to the westward, was started in January 1935 and has been continued on a low-priority basis since that time. A total of 158,700 cubic yards of material, consisting of 65,100 cubic yards of mined rock, 75,400 cubic yards of unmined rock and 18,200 cubic yards of earth were sluiced into the Canal prism to be removed by regular dredging operations. During 1949 dipper dredges excavated a total of 395,400 cubic yards from this project, as follows:

Equipment	Days worked	Yardage dredged		
		Earth	Rock	Total
Cascadas.....	81¼	38, 100	276, 900	315, 000
Paraiso.....	20¼	6, 000	74, 400	80, 400
Total.....	101½	44, 100	¹ 351, 300	395, 400

¹ 51,800 cubic yards of unmined rock.

PACIFIC DISTRICT—*Pacific Entrance, Maintenance.*—Dredging in the Pacific entrance channel of the Canal was in progress 90 days during the year by the pipe-line suction dredge *Mindi*, which excavated 2,830,000 cubic yards of earth.

Auxiliary Dredging—Other Projects

ATLANTIC DISTRICT—*Cristobal Inner Harbor.*—The pipe-line suction dredge *Mindi* worked 14¾ days during the year, excavating 472,900 cubic yards of earth.

Cristobal Outer Harbor.—The pipe-line suction dredge *Mindi* worked 56½ days during the fiscal year 1949, excavating 1,432,500 cubic yards of earth.

Isthmian Canal Studies (Public Law No. 280)

Core samples were taken in widely scattered areas along the present Canal. A total of two holes drilled to a depth of 69 feet were completed during the year.

Slides

A total of 40,100 cubic yards of material was excavated from Culebra slide (west) and Powder House slide (east) in Gaillard cut during the fiscal year 1949. The dipper dredge *Cascadas* worked 4¾ days on the Powder House slide (east) removing 500 cubic yards of earth and 2,300 cubic yards of unmined rock; the dipper dredge *Cascadas* worked 12¾ days on the Culebra slide (west), removing a total of 37,300 cubic yards of material, which consisted of 14,000 cubic yards of earth, 21,800 cubic yards of mined rock and 1,500 cubic yards of unmined rock.

Slide activity throughout the cut was generally much less than in previous years. Culebra slide (west) continued to be the most active of all the slides; Powder House slide (east), which is usually a quiescent slide, showed a pronounced movement on June 10, 1949, when a portion of the bank dropped as a mass into the Canal.

Small movements were observed in six other slides during the year. Numerous small bank breaks occurred which were limited to movements of no consequence. There was no interference with shipping on account of slides during the year.

Excavation from slides in Gaillard cut from June 30, 1913, to June 30, 1949, totaled 52,176,400 cubic yards.

Subsidiary Dredging Division Activities

SAND AND GRAVEL.—During the past fiscal year 25,996 cubic yards of sand and gravel of all classes (both run-of-bank and washed) were shipped from the gravel stock pile at Gamboa as compared with 36,309 cubic yards shipped in the previous year. There was no pumping of run-of-bank gravel into the stock pile at Gamboa during the fiscal year 1949.

The craneboat *Atlas* was in service 23¼ days excavating 28,785 cubic yards of sand at Chame Point, Republic of Panama; this sand was pumped into barges and delivered to dock No. 7, Balboa, for the supply department.

HYACINTH CONTROL AND OTHER ACTIVITIES.—The Canal and adjacent waters through Gaillard cut, Miraflores Lake and Gatun Lake (including all dump areas), were periodically patrolled throughout the year for the purpose of keeping the growth of hyacinths under control. Log booms at the mouths of the Chagres and Mandinga Rivers were maintained to prevent hyacinths, logs, floating islands and other obstructions from entering the Canal channel during freshets or spilling at Madden Dam. During the year, periodical inspection trips were made at the Chagres, Mandinga, Frijoles and Azules Rivers and along the shores of Barro Colorado Island, Pena Blanca and Gigante Bays, dumps Nos. 1 to 14, and Miraflores, Pedro Miguel and Red Tank Lakes. Weekly inspection trips were also made of the Canal channel between Gamboa and Gatun.

It is estimated that 32,379,000 hyacinth plants were destroyed during the past year, of which 28,448,000 were pulled and 3,931,000 were sprayed; of the plants pulled, 13,923,000 were removed by the debris cableway. Two hundred and ninety-nine cords of driftwood were removed by the debris cableway during the past year and an additional 143 cords of driftwood were picked up along the banks of the Chagres, Mandinga, and Cocoli Rivers, Gaillard cut and Gatun, Miraflores, Pedro Miguel and Red Tank Lakes.

Ferry Service

Thatcher Ferry service was continuous throughout the past year with the exception of a total of 10 days when service was suspended to make repairs to ferry ramps and slips. This ferry crosses the Canal at the Pacific terminal and connects Balboa on the east bank with Thatcher Highway on the west bank. Service was maintained by rotating the three ferry boats, *Presidente Amador*, *President Roosevelt* and *Presidente Porras*, keeping two of these ferries in continuous service.

Since the opening of the bridge across the Canal at Miraflores in May 1942, the ferry traffic has become fairly well stabilized. In the following table are shown the more important statistics relative to operations of the Thatcher Ferry for the past three fiscal years:

	Fiscal year		
	1949	1948	1947
Single trips made.....	53, 793	55, 736	55, 601
Vehicles carried:			
Panama Canal vehicles.....	10, 681	10, 884	15, 597
U. S. military vehicles.....	33, 995	44, 932	82, 231
Commercial trucks.....	101, 928	117, 856	113, 640
Commercial passenger cars.....	147, 414	152, 048	140, 246
Private cars.....	255, 066	245, 771	232, 801
Total vehicles carried.....	549, 084	571, 491	584, 515
Total passengers carried.....	2, 922, 970	3, 036, 065	2, 923, 599

Atrato—Truando Survey

After reviewing the report submitted by the Governor on November 21, 1947, in accordance with Public Law 280, Seventy-ninth Congress, First Session, and after making a personal inspection by air of the various canal routes across the American Isthmus, the Secretary of the Army directed that additional data be secured with respect to a possible canal along the route of the Atrato and Truando Rivers in the Republic of Colombia in order to determine more accurately the feasibility and the approximate cost of constructing one comparable in its design to that proposed for the Panama route.

Negotiations with the Colombian Government resulted in a joint Colombian-United States commission to make the necessary survey of the route. Members of the commission for the United States consisted of personnel of the special engineering division and the section of surveys of The Panama Canal.

The specific objectives of the survey were to determine the accuracy of information available from previous investigations; to establish the hydraulic characteristics of the Atrato River in order to evaluate

its usefulness as a canal channel; to establish and monument precise geodetic positions for correlation of existing maps; to determine the practicability of locating the canal channel in the flood plain west of the Atrato River and utilizing the Atrato River as a flood control channel; to determine the geology of the region crossed by the proposed canal alignment and the engineering properties of the materials encountered; to develop the topography of the continental divide region from which true profiles of the canal alignments could be obtained; and to make hydrographic surveys in Humboldt Bay.

A report, consisting of one volume containing the text, drawings, and two appendices, was submitted by the Governor to the Secretary of the Army as supplementary information to the report dated November 21, 1947.

Section II

BUSINESS OPERATIONS

The business enterprises operated by The Panama Canal and by the Panama Railroad Company embrace a number of activities which in the United States would normally be carried on by private enterprise. These activities have been developed to meet the needs of shipping passing through the Canal and of the Canal-Railroad, the armed services, and their employees. The business enterprises include the supply of fuel, provisions, ship chandlery, and repairs to vessels; the provision of public utility services; the maintenance of living quarters, and the sale of food, clothing, and other essentials to Canal and Railroad employees; the handling of cargo and allied operations; the operation and management of a railroad line; and a steamship line between New York and the Isthmus.

The Canal and the Railroad are separate organizations, but the administration of both organizations is vested in the Governor of The Panama Canal, who is also president of the Panama Railroad Company.

PANAMA CANAL BUSINESS OPERATIONS

Business operations of The Panama Canal are conducted separately from operating activities pertaining directly to the transiting of vessels and the government and sanitation of the Canal Zone. The annual appropriation acts for The Panama Canal authorize the expenditure and reinvestment of all moneys received from the conduct of auxiliary business activities, with the proviso that any net profit derived from such business activities shall be covered annually into the Treasury of the United States.

It is the aim to operate the business activities as a whole on a self-supporting basis and, in general, to include as a charge against their operations 3-percent interest on the net investment. The amount representing charges for interest on investment is a part of the net profits covered into the Treasury. The net investment in business activities totaled \$37,764,063.33 on July 1, 1948, and the capital charge for the fiscal year 1949 was \$1,132,921.80 (table No. 23, sec. V). The net revenue of \$1,006,959.04 fell short by \$125,962.76 of meeting this capital charge.

Mechanical and Marine Work

On the basis of revenues received for work accomplished, there was an over-all decrease of 13.9 percent in the volume of business of the mechanical division in comparison with the fiscal year 1948. The drastic reduction in work required by commercial interests caused revenues from that source to decline by \$1,167,411, or 42.5 percent, from the fiscal year 1948. The decline in commercial work was overcome to some degree by a sharp rise in the volume of work performed for the United States Navy, which was more than double that of the previous fiscal year. Revenues from the United States Army and the Panama Railroad Company increased 25.2 percent and 2.7 percent, respectively, while those from The Panama Canal declined 24.2 percent.

The following table shows the class and source of work for the past two fiscal years:

Gross Revenues—Class and Source

	Fiscal year 1949		Fiscal year 1948	
	Revenues	Percent of total	Revenues	Percent of total
Class:				
Marine.....	\$3,704,800	65.6	\$4,390,724	66.9
Railroad.....	792,450	14.0	794,426	12.1
Fabricated stock.....	379,211	6.7	319,854	4.9
Sundries.....	768,887	13.7	1,053,918	16.1
Total.....	5,645,348	100.0	6,558,922	100.0
Origin:				
The Panama Canal.....	1,487,589	26.4	1,961,262	29.9
Panama Railroad Company.....	871,865	15.4	849,006	13.0
Other U. S. departments:				
Army.....	628,563	11.2	502,231	7.6
Navy.....	1,073,287	19.0	491,551	7.5
All others.....	1,994	-----	5,411	.1
Commercial.....	1,582,050	28.0	2,749,461	41.9
Total.....	5,645,348	100.0	6,558,922	100.0

Marine Repair Work

The decline in the commercial work load during the past fiscal year has been a matter of grave concern. In addition to the drastic over-all reduction in work from this source, the flow of such work has been decidedly uneven, resulting in periods when it was difficult to man all jobs properly, and other periods when there was no commercial work available in the yard. Under such conditions, it was difficult to maintain a proper working force throughout the year. With the exception of the dredge *Colombia* which came to the yard from Colombia for the express purpose of securing overhaul and repair, the majority of the repairs performed could be classified as emergency

or voyage, although there were 19 calls for service which developed into jobs of major importance, each of which exceeded \$10,000 in billing.

The abnormal increase in work performed for the Navy, which more than doubled that of the fiscal year 1948, was accounted for largely by the work entailed in preparing a large floating dry dock for north-bound transit of the Panama Canal. The successful preparation for transit, including careening, of the 15,000-ton floating dry dock AFDM-1 was the outstanding job of the year. This dry dock, which was too wide by several feet to enter the Canal locks, had to be careened 90° to a position in which its bottom was perpendicular to the surface of the water. The unnatural position the dock was to assume made necessary the removal of all portable equipment, the bracing of all machinery to prevent excessive stress on foundations and shafting, and the installation of heavy beam braces to ease the strain on the wing wall. To prepare the dock for the careening operation, a thousand Navy pontoons were procured, assembled into units of 15 each complete with piping, and secured to the wing wall which had previously been rendered watertight for successful immersion. The careening operation was accomplished by filling pontoons in selected groups until the dry dock assumed the desired 90° inclination, after which it floated on its side in a perfectly stable position. The entire careening operation was accomplished according to plan and proceeded without untoward incident.

Before transit of the Canal, the exposed dock bottom was thoroughly cleaned and painted. Upon arrival at Cristobal, the dock was returned to its normal floating position by a reversal of the careening operations. The careening equipment was then removed and at the termination of the fiscal year the dry dock was being prepared, by the Cristobal shop forces, for towing to the United States.

In addition to the floating dry dock job, numerous locally assigned Naval craft were dry docked and a considerable amount of cleaning, painting, and repair work was performed on them. Emergency and voyage repairs were also made to Naval vessels in transit. Two additional floating dry docks, the AFDM-3 and AFDM-7, arrived at the Balboa yard during the latter part of the fiscal year, and are now in the process of being prepared for Canal transit similarly to the AFDM-1.

The work for the United States Army consisted primarily of the dry docking and repairing of area craft, and emergency and voyage repairs to Army transports transiting the Canal. The Army Engineer dredge *James F. Hyde*, bound for Florida, was damaged by grounding off Central America, and required permanent repairs.

The decline in revenue derived from Panama Canal sources is attributable to a reduction in work requirements of the marine and dredging

divisions. Work accomplished for the marine division included the construction of the boarding launch *Darter* and passenger launch *Plover*, and the dry docking of the tugs *Alhajuela*, *Cardenas*, and *Gorgona II* for overhaul and general repairs. Numerous smaller pieces of harbor equipment were also repaired. The usual overhaul and repair work to dredging division equipment was performed during the year. The tugs *Culebra*, *Gatun*, *Mariner*, and *Trinidad*; the ferryboats *President Roosevelt* and *Presidente Porras*; the dredge *Cascadas*; the drillboat *Vulcan*; the crane boat *Ajax*; and numerous barges were dry docked and repaired.

The following statement shows the number of vessels and the total "ship days" for each category of vessels repaired at Balboa and Cristobal for the fiscal year 1949:

Category	Balboa		Cristobal		Total	
	Number of ships	Ship days ¹	Number of ships	Ship days ¹	Number of ships	Ship days ¹
Commercial.....	306	1,384	683	1,398	989	2,782
U. S. Army.....	40	330	56	392	96	722
U. S. Navy.....	30	601	20	355	50	956
Panama Canal.....	22	332	39	264	61	596
Total, 1949.....	398	2,647	798	2,409	1,196	5,056
Total, 1948.....	540	4,330	1,027	3,172	1,567	7,502

¹ Total days consumed in repairing number of ships indicated.

Dry Docks and Marine Railways

The following table summarizes dry dock and marine railway operations during the fiscal year 1949, with comparative figures for the two preceding years:

[Number of vessels dry docked]

Category	Fiscal year 1949			Fiscal year	
	Balboa dry docks	Cristobal dry docks and marine railways	Total	1948 total	1947 total
U. S. Army.....	11	14	25	39	26
U. S. Navy.....	13	3	16	19	16
Commercial.....	32	26	58	71	49
Total outside interests.....	56	43	99	129	91
Panama Canal.....	15	7	22	23	7
Panama Railroad.....		1	1	1	1
Grand total.....	71	51	122	153	99

On August 16, 1948, marine railway No. 1 was declared unsafe for further use and has been returned to the Navy for disposition.

Shop Work

Fabrication of six towing locomotives for the locks division, which was commenced in the fiscal year 1947, was continued through this fiscal year. The completion of this work was delayed by nonreceipt of necessary electrical equipment. The usual manufacturing work for the storehouses was carried on, plus the fabrication of items ordinarily required by the dredging division, such as shore pipe, pontoons, ball joints, etc.

Plant Improvement

The fluctuating workload throughout the year was accompanied by a reduction of the division overhead expenditures to an absolute minimum. Plant maintenance work was limited to absolutely essential items, and the plant improvement program was reduced to items of the most urgently needed nature. Consequently, much maintenance and improvement work, which should be accomplished before long in order to avoid detriment to effective operation of plant, was deferred during the fiscal year 1949.

Electrical Work

The principal activities of the electrical division are the operation and maintenance of the electric light and power system, the construction and maintenance of electrical facilities as required by The Panama Canal and other government agencies, and the performance of services for vessels undergoing repairs at the Canal terminals. The electrical division supervises the operation and maintenance of the telephone, telegraph, electric clock, printing telegraph and railway signal systems owned by the Panama Railroad. The responsibility for the operation and maintenance of the railway signal system was transferred to the General Manager, Panama Railroad, on June 30, 1949.

Following is a comparison of the two principal classes of expenditures of the electrical division for the past three fiscal years:

	Fiscal year		
	1949	1948	1947
Electrical construction and maintenance work	\$1,799,459	\$1,417,900	\$1,705,888
Maintenance and operation of electrical power system	1,456,618	1,327,370	1,223,204

Among the principal projects of electrical work carried on during the year were the wiring and installation of electrical facilities for the occupational high schools at La Boca and Silver City; the installation

of electric machine tools and equipment in the vocational school at La Boca; the wiring and installation of electrical facilities of the newly constructed quarters of both United States-rate and local-rate employees; the improvements to the electrical distribution system at Silver City and Old Cristobal; improvements and extensions to street-lighting facilities; the continuation of work on improvement of 60-cycle facilities within the mechanical division areas at Mount Hope and Balboa; the completion of a new duct line between Balboa and Diablo Heights to provide electrical services to the newly constructed quarters and the United States Army cold-storage plant; construction of new duct lines and relocation of electrical facilities to provide electrical services for the new obstetrical and clinic building at Gorgas Hospital; improvement of telephone service between Canal Zone and Panama City by the installation of a new 100-pair, 19-gage telephone cable; the modernization and rehabilitation of the fire-alarm system in the Ancon-Balboa-Diablo Heights area, and installation of electrical facilities for the new Balboa Theatre now under construction.

Information concerning the principal construction projects undertaken and the operation of the power system are given on page 16 of this report, under the general heading of Canal operation. The expenditures shown in the above table include interdepartmental transactions.

Purchases in the United States

The principal purchases of supplies for the Panama Canal were made, as heretofore, through the Washington office of The Panama Canal; the volume of the purchases is indicated by the following table:

	Fiscal year		
	1949	1948	1947
Number of purchase orders placed.....	8,667	7,857	7,957
Value of orders placed.....	\$8,118,372	\$7,341,563	\$7,591,828
Number of disbursement vouchers prepared.....	15,769	16,112	15,045
Value of above vouchers.....	\$12,262,553	\$8,572,247	\$9,358,079
Number of collection vouchers prepared.....	680	770	557
Value of above vouchers.....	\$638,898	\$2,245,799	\$625,130
Cash discounts taken.....	\$41,614	\$33,505	\$34,204

Storehouses and Ship Chandlery

In addition to the main functions of requisitioning, storing and issuing general supplies for the Canal and Railroad (exclusive of the merchandising operations of the commissary division), The Panama Canal storehouses sell ship chandlery and other supplies to commercial shipping, as well as to units of the United States armed services. The

following figures indicate the volume of material and supplies cleared through the stores accounts during the past 3 years:

General storehouses	Fiscal year		
	1949	1948	1947
Gross revenues, sales and issues.....	\$9, 835, 253	\$10, 149, 528	\$9, 585, 596
Cost of materials, plus operating expense.....	9, 545, 261	9, 600, 099	9, 486, 152
Net revenues.....	289, 992	549, 429	99, 444
Inventory as of June 30 ¹	12, 822, 149	10, 841, 644	11, 909, 611

¹ This includes all material and supplies of The Panama Canal, by far the greater part of which is in the general storehouses.

Obsolete and Unserviceable Property and Equipment

During the year disposition was made by sale, or by destruction where the items had no money value, of obsolete or unserviceable property and equipment which had an original value of \$1,004,130. Replacements were made as necessary.

Bulk Petroleum Products

All deliveries of fuel oil, Diesel oil, gasoline and kerosene to and from storage tanks, for private companies and for The Panama Canal, are made through pipe lines and pumping plants owned and operated by The Panama Canal.

In the fiscal year 1949, a total of 11,140,830 barrels of fuel and Diesel oil were handled by the oil handling plants, as compared with 12,239,174 barrels in the preceding fiscal year. These plants also handled 40,924,876 gallons of gasoline and kerosene in the fiscal year 1949, in comparison with 44,236,808 gallons in the preceding fiscal year.

See table No. 47, section V, for further statistics on the oil-handling plants.

Building Construction and Maintenance

The principal projects of building construction for The Panama Canal completed by the building division in the fiscal year 1949 are shown in the following paragraphs. Unless otherwise specified, the projects listed are new buildings:

Ancon-Balboa.—Pattern storage building, mechanical division; rebuilding of one type-104 quarters; alterations and additions to Ancon laundry; replacement of elevators in sections B and C, Gorgas Hospital; construction of foundations for obstetrical building, Gorgas Hospital.

Diablo Heights.—Four type-112, 1 type-218, 1 type-321, 2 type-322, 1 type-324 and 1 type-326 masonry type quarters; 3 prefabricated

type quarters; conversion of one 12-family type quarters to 3-family type quarters; compressor building for Diablo dock.

Cocoli.—Addition to commissary; conversion of 1 type-215 quarters to 2-family type quarters, conversion of 2 type-S121R quarters to 6-family type quarters.

Corozal.—Nurses' quarters, Corozal Hospital.

La Boca.—Unit "A," Pacific bakery.

Red Tank.—Dispensary.

Paraiso.—Two type-127 frame quarters, 1 type-128 frame quarters, 1 type-129 frame quarters; 4 type-135 masonry quarters.

Margarita.—One type-102R and 3 type-112 quarters.

Silver City.—Vocational school and high school; conversion of 12 cantonment-type buildings to 4-family apartments.

Camp Coiner.—Three type-127 and 7 types 130-136 masonry quarters.

In addition to the principal projects listed above which were completed during the year for The Panama Canal, work was performed for the Panama Railroad Company, the armed services, and employees. The volume of operation as measured in financial terms totaled \$5,912,405, as compared with \$4,217,267 in the fiscal year 1948.

The total volume of work for the past three fiscal years is summarized in the following table:

	Fiscal year		
	1949	1948	1947
For Canal divisions.....	\$4, 588, 590	\$3, 125, 632	\$3, 659, 112
For Panama Railroad Company.....	225, 615	266, 723	417, 543
For other departments of the Government, employees and others.....	1, 098, 200	824, 912	483, 418
Total.....	5, 912, 405	4, 217, 267	4, 560, 073

NOTE.—Includes funds spent from capital allotments which in 1949 and 1948 were not taken up in net revenue appearing in table No. 15, section V.

Quarters

For United States-rate employees.—Replacement of quarters was continued, a total of 37 apartments in 24 houses of one- and two-family types having been completed during the year in the Balboa and Cristobal districts. Eighteen of the 24 houses were built by the building division and 6 under contract. At the close of the fiscal year, 8 additional buildings, comprising 15 apartments, were under construction at Balboa and Cristobal.

On June 30, 1948, there were 41 applications for family quarters from regular employees in all districts, and on June 30, 1949, 42 applications were on file. These figures represent applications from

regular employees for assignment within their official work districts, a few of whom occupy quarters temporarily elsewhere, and all of whom are requesting particular types of quarters. In addition there were 593 applications on file for provisional or temporary assignment from employees of other agencies who are entitled to occupy available Canal quarters in accordance with assignment rules.

Under existing regulations employees are required to have an assignment to family quarters before permission is granted for their families to come to the Canal Zone.

For local-rate employees.—Construction of experimental housing was continued during the year, with 46 apartments at Paraiso and Camp Coiner having been completed. At the close of the year, work on 35 masonry-type quarters at Camp Coiner was in progress. Conversion of 18 cantonment-type buildings to 4-family apartments was carried forward in Silver City; two 12-family type quarters at Cocoli were converted to 6-family quarters; and 3 barracks buildings at Balboa were converted to 78-bed dormitories.

The demand for quarters for local-rate employees still greatly exceeds the supply. As of June 30, 1949, there were 1,077 applications for family quarters and 770 applications for bachelor quarters, a total of 1,847, as compared with 1,674 on file June 30, 1948.

Motor Transportation

The motor transportation division is charged with the operation and maintenance of motor transportation for the departments and divisions of The Panama Canal and Panama Railroad Company. The centralization of transportation facilities in this division and the requirement that it be operated on a self-sustaining basis have been primarily for the purpose of supplying needed transportation at minimum cost to The Panama Canal and Panama Railroad Company. Repair work is also performed for employees and for contractors engaged in work for the Government of the Canal Zone.

The public transportation system of privately owned busses operating under the supervision and control of the motor transportation division continued to carry employees and their families in and between the various towns of the Canal Zone; 127 busses were operating as of June 30, 1949.

Revenues of the division during the past year, including motor repair shop activities, totaled \$1,862,544, and the expenses, \$1,816,205, leaving a net revenue of \$46,339 for the fiscal year 1949.

During the fiscal year, 79 cars and trucks were purchased and 79 cars and trucks were retired. At the close of the fiscal year 755 cars and trucks, 34 trailers and 5 motorcycles were on hand.

Panama Canal Press

The operations of the Panama Canal press were continued under the same policies as heretofore. The printing plant carries stocks of materials, and prints such forms, stationery, etc., as are required in connection with the operation of The Panama Canal and the Panama Railroad Company.

The printing facilities of The Panama Canal were consolidated into one unit with the transfer of the reproduction plant at Diablo Heights, formerly operated by the special engineering division, to the supervision of the Panama Canal press.

The following is a summary of the financial operations of this plant during the past 3 years:

	Fiscal year		
	1949	1948	1947
Gross sales revenues.....	\$630, 145	\$528, 192	\$481, 833
Total expenses (including cost of materials used in manufacturing and cost of stationery stores not processed).....	614, 634	510, 076	459, 393
Net revenues.....	15, 511	18, 116	22, 440

Revenues Derived From Rental of Lands in the Canal Zone

Rentals for building sites and oil-tank sites in the Canal Zone totaled \$64,957 for the year as compared with \$55,931 for the fiscal year 1948. Rentals from agricultural land in the Canal Zone totaled \$6,943 as compared with \$6,624 for the preceding year. At the close of the fiscal year 611 licenses were in effect, covering 1,229 hectares of agricultural land within the Canal Zone. This is a reduction of 15 in the number of licenses as compared with the previous fiscal year and a reduction in the area held under licenses of 24½ hectares. This reduction is largely the result of the policy adopted as a health measure in May 1935, that no more licenses for agricultural land would be issued and that holdings under licenses previously granted may not be sold or transferred.

BUSINESS OPERATIONS UNDER THE PANAMA RAILROAD COMPANY

The Panama Railroad Company was incorporated in 1849 under the laws of the State of New York for the purpose of constructing and operating a railroad across the Isthmus of Panama. When the concessions, rights, and property of the New French Canal Company were purchased in 1904, ownership of the stock of the Panama Rail-

road Company was transferred to the United States Government. On June 30, 1948, the Company was reincorporated pursuant to section 304 (b) of the Government Corporation Control Act, comprising sections 245 to 256 of title 2, Canal Zone Code. The Governor of The Panama Canal is by statute the President of the Company. Since the operations of the Railroad complement those of the Canal, the designation of the Governor of The Panama Canal as President of the Panama Railroad Company has insured complete coordination of the activities conducted by the two organizations.

As the activities of the Railroad Company are covered in detail in its annual report, only the major features of operation as they relate to Canal administration are included in this section.

In addition to the operations of the trans-Isthmian railroad, the business enterprises conducted by the Panama Railroad Company include the following: A steamship line operating between New York and the Canal Zone; the loading, unloading, storage, and transfer of cargo for shipping interests at the terminal ports; the operation of wholesale warehouses, retail stores, and subsidiary manufacturing plants engaged in the supply of food, clothing, and other essential commodities to governmental agencies and to Government employees and their families; and the operation of a coaling plant, hotels, a telephone system, a dairy, and a laundry.

Trans-Isthmian Railroad

The railroad line operates between Colon, the Atlantic terminus, and Panama City, the Pacific terminus. In addition, the railroad serves all activities of The Panama Canal and of the armed forces located between the two terminal cities. Gross revenues from the operations of the railroad proper (not including subsidiary business activities) during the fiscal year 1949 amounted to \$2,106,283 in comparison with \$2,496,067 for the preceding year. Revenue freight totaled 291,183 tons, as compared with 386,733 tons during 1948, a decrease of 95,550 tons.

Comparative statistics covering the significant features of railroad operations during the past 3 years are presented in the following table:

	Fiscal year		
	1949	1948	1947
Average miles operated, Colon to Panama.....	50.93	50.93	50.93
Gross operating revenues.....	\$2,106,283	\$2,496,067	\$2,708,167
Number of passengers carried:			
First class.....	126,508	182,043	234,409
Second class.....	270,254	319,062	381,840
Total.....	396,762	501,105	616,249

	Fiscal year		
	1949	1948	1947
Revenue per passenger-train-mile.....	\$2.67	\$3.34	\$4.25
Revenue per freight-train-mile.....	\$27.49	\$28.36	\$27.15
Passenger train mileage.....	151,379	148,268	144,802
Freight train mileage.....	53,304	69,218	66,020
Work train mileage.....	3,695	2,032	4,864
Total train mileage.....	208,378	219,548	215,686
Switch locomotive miles.....	109,516	142,403	152,106

Receiving and Forwarding Agency

This division handles the dock and harbor activities of the Panama Railroad Company at the two terminals of the Canal. The following statistics summarize the results of operations for the past 3 years:

	Fiscal year		
	1949	1948	1947
Total revenue.....	\$2,621,919	\$2,573,955	\$2,821,982
Total cargo handled and transferred across docks.....	<i>Tons</i> 1,189,266	<i>Tons</i> 1,297,963	<i>Tons</i> 1,492,931
Cargo stevedored by Panama Railroad Company.....	552,161	520,908	532,354
Cargo ships handled.....	2,455	2,881	2,823
Agency services furnished to vessels.....	78	58	37

Coaling Plants

The volume of coaling plant operations at Cristobal and Balboa for the past three fiscal years is shown in the following table:

	Fiscal year		
	1949	1948	1947
	Cristobal only	Cristobal and Balboa	
Gross revenues.....	\$418,415	\$468,856	\$605,236
Coal sold.....	<i>Tons</i> 16,601	<i>Tons</i> 19,357	<i>Tons</i> 29,688
Coal purchased.....	19,828	10,026	30,775

Effective July 1, 1948, operations at the Balboa coaling plant were discontinued. By the end of the fiscal year 1949 the Balboa plant, with the exception of one berm crane and one unloader tower, had been scrapped.

Telephone System

Gross revenues from the operation of telephones, electric clocks, and electric printing telegraph machines totaled \$367,257, as compared with receipts of \$371,873 for the preceding year.

During the year 1,456 telephones were installed and 1,241 were discontinued or removed, resulting in a net increase of 215 telephones for the year. At the end of the fiscal year 1949, there were in service 6,141 telephones, as well as 56 electric clocks and 37 automatic printing telegraph typewriters. Telephone calls averaged 108,639 calls per day in 1949 and 98,495 per day in 1948 during the sample days tested. This represents an average of 17.7 calls per telephone per day in 1949, as compared with 16.6 in 1948.

Commissary Division

The primary function of the commissary division of the Panama Railroad Company is to supply at reasonable prices food, clothing, and household goods to meet the needs of United States Government personnel and the various United States Government departments on the Isthmus. In carrying out this function the division operates wholesale warehouses, cold-storage plants, a laundry and a dairy, as well as retail stores in each of the Canal Zone towns. Sales are restricted to agencies and personnel of the United States Government and others residing in the Canal Zone, except that ice, food, and other essentials may be purchased by commercial steamships passing through the Canal or calling at its terminal ports.

Sales

Net sales for the fiscal year 1949 totaled \$32,841,765, compared with \$33,140,846 for the previous fiscal year. The value of merchandise on hand June 30, 1949, was \$5,538,041 compared with \$7,070,127 at the close of the fiscal year 1948. The ratio of sales to an average monthly inventory of \$8,152,711 indicates a theoretical stock turnover of once in 12.9 weeks. The distribution of sales for the past three fiscal years is shown in the following table:

	Fiscal year		
	1949	1948	1947
United States Government (Army and Navy).....	\$2, 182, 868	\$1, 685, 068	\$1, 775, 569
The Panama Canal	3, 772, 976	3, 490, 455	3, 479, 546
Panama Railroad Company	503, 501	553, 073	359, 517
Individuals and companies	1, 195, 550	1, 199, 869	1, 137, 669
Commercial ships	1, 029, 970	1, 244, 759	1, 221, 529
Employees	25, 102, 830	25, 820, 816	25, 251, 773
Gross sales	33, 787, 695	33, 994, 040	33, 225, 603
Less discounts, credits, etc.	945, 930	853, 194	947, 140
Net sales	32, 841, 765	33, 140, 846	32, 278, 463

Purchases

Purchases during the year aggregated \$24,989,483, a decrease of \$3,610,900 from the previous year. The following tabulation shows the value of the various classes of merchandise purchased for the past 3 years:

	Fiscal year		
	1949	1948	1947
Groceries.....	\$8, 770, 902	\$8, 241, 152	\$8, 428, 747
Candies and tobacco.....	1, 007, 349	1, 225, 249	1, 053, 100
Housewares.....	1, 678, 455	2, 139, 608	1, 799, 954
Drygoods.....	3, 137, 466	5, 412, 270	5, 326, 586
Shoes.....	848, 513	1, 088, 431	1, 483, 260
Cold storage.....	4, 338, 643	4, 655, 911	5, 116, 441
Raw material.....	1, 848, 197	1, 921, 722	1, 563, 389
Cattle.....	665, 807	562, 591	472, 853
Milk and cream.....	152, 262	180, 599	294, 431
Dairy products.....	2, 406, 725	3, 011, 555	2, 749, 131
Dairy farm herd.....	135, 164	161, 295	20, 237
Total.....	24, 989, 483	28, 600, 383	28, 308, 129

Hotels

The Hotels Tivoli and Washington were operated by the Panama Railroad Company without change of policy during the year. These hotels are an essential adjunct to the Canal, providing necessary accommodations for employees, visiting Government officials, and others.

The gross revenue from hotels was \$864,680, as compared with \$891,689 in 1948, and the number of guest days was 85,025 compared with 95,077 in 1948.

Panama Line

The gross operating revenue of the Panama Line for the fiscal year 1949 was \$5,448,012, and the gross operating expenses totaled \$5,223,982, resulting in a net profit of \$224,030.

Freight carried during the year totaled 239,577 tons, and passengers carried numbered 13,868. Freight for account of The Panama Canal and other departments of the United States Government in the Canal Zone was carried at tariff rates, but passengers were carried at reductions from tariff rates ranging from 25 to 75 percent.

The program of reconditioning of the Company's three vessels, the *Ancon*, *Cristobal* and *Panama*, was completed by June 1948, and weekly service of the line between New York and the Canal Zone was maintained throughout the fiscal year.

Section III

ADMINISTRATION

DEPARTMENTS

The organization of The Panama Canal on the Isthmus embraces five principal departments, namely, Operation and Maintenance, Supply, Finance, Executive, and Health. In addition, an office of The Panama Canal is maintained in Washington, D. C. The Panama Railroad Company, a Government-owned corporation operating a steamship line between New York and the Canal Zone and a railroad as well as other business enterprises on the Isthmus, is a distinct unit, but it is closely affiliated with and operated as an adjunct to The Panama Canal.

Operation and Maintenance

The Department of Operation and Maintenance includes the management functions and those directly involved in the operation and maintenance of the Canal as a waterway, including the dredged channel, locks, dams, aids to navigation, accessory activities such as shops and dry docks, vessel inspection, electrical and water supply, sewer systems, roads and streets, hydrographic observations, surveys and estimates, and miscellaneous construction other than the erection of buildings. Construction of the Third Locks, now in a suspended status, and recent studies concerning investigation of means of increasing the capacity and security of the Panama Canal, as provided by Public Law No. 280, approved December 28, 1945, also were included in this department.

Supply

The Supply Department is charged with the acquisition, storage, and distribution of materials and supplies for The Panama Canal and Railroad; the maintenance and construction of buildings; the assignment of living quarters; care of grounds; the operation of storehouses, oil handling plants, an experimental garden, and a printing plant; the supplying of motor-transportation facilities for the various departments and divisions of the Canal and Railroad organizations; and the performance of land-rental functions.

Finance

The Department of Finance is responsible for the collection and disbursement of funds; the adjustment and settlement of claims; the administrative audit of fiscal accounts; the correct recording of financial transactions of the Canal and Railroad; cost accounting for the Canal and Railroad; and the preparation of estimates for appropriations.

Executive

The Executive Department embraces the civil-government functions including the administration of police and fire protection, postal service, customs, shipping commissioner duties, estates, schools, and, in addition, the general correspondence and records of The Panama Canal and Panama Railroad Company, personnel administration, wage adjustments, general information, relations with Panama, and the operation of clubhouses, restaurants, and moving-picture theaters.

Health

The Health Department has jurisdiction over all matters pertaining to sanitation and public health within the Canal Zone and the cities of Panama and Colon, the operation of hospitals and dispensaries, and the enforcement of quarantine regulations.

Panama Railroad Company

The operations of the Panama Railroad Company on the Isthmus are carried on as an adjunct to The Panama Canal. As the Governor of The Panama Canal is also President of the Panama Railroad Company, the heads of all departments, both of the Canal and Railroad organization, report to him.

PROPOSED REORGANIZATION

A detailed plan for a revision of the organization of The Panama Canal was submitted in June 1949. The proposed revised organization was the result of detailed studies made throughout the year and grew out of the need for a general reorganization of The Panama Canal to meet more adequately the present-day operating conditions and the complexities that have developed in the conduct of Government business.

The general objectives sought to be accomplished by the proposed revision of The Panama Canal organization may be stated briefly as follows: To establish a clear line of distinction between the general

governmental and administrative functions and the operating function of the organization; to delegate, to the greatest possible extent, authority and responsibility for operational functions to the heads of the several large subordinate units with general policy controlled and coordinated at top staff level; and to secure a more logical grouping of related functions.

The revised organization would establish a more effective control and coordination of policies, reorganization and management of the numerous diversified activities of the various units both at the top and at lower administrative levels.

CHANGES IN ADMINISTRATIVE PERSONNEL

Dr. Howard C. Rufus, United States Public Health Service, was appointed chief quarantine and immigration officer on August 2, 1948, vice Dr. John P. Turner, United States Public Health Service, relieved from duty with The Panama Canal.

Col. Howard Ker, United States Army, was appointed assistant engineer of maintenance on August 15, 1948, vice Col. Richardson Selee, United States Army (retired).

Col. Richardson Selee, United States Army (retired), was appointed Assistant to General Manager, Panama Railroad Company, on August 15, 1948, vice Mr. LeRoy A. Kane, resigned.

Mr. August C. Medinger was appointed superintendent, dredging division, on October 1, 1948, vice Mr. John G. Claybourn, retired.

Capt. Robert S. Bertschy, United States Navy, was appointed captain of the port, Cristobal, on October 17, 1948, vice Capt. Myron E. Thomas, United States Navy, relieved from duty with The Panama Canal.

Mr. Wilson H. Crook was appointed director of clubhouses on January 5, 1949, vice Mr. Richard G. Taylor, retired.

Mr. Roy C. Stockham was appointed superintendent, Locks Division, on January 9, 1949, vice Mr. Ellis D. Stillwell, retired.

Mr. Eugene C. Lombard was appointed executive secretary on March 20, 1949, vice Mr. Frank H. Wang, appointed Adviser to the Governor.

Mr. Frank H. Wang was appointed Adviser to the Governor on March 20, 1949.

Mr. Floyd R. Johnson was appointed second assistant chief quartermaster on March 20, 1949.

Col. Chas. G. Holle, United States Army, was relieved from duty as Engineer of Maintenance on June 2, 1949. (*Note.*—Col. Herbert D. Vogel, United States Army, was appointed to fill this vacancy, effective July 1, 1949.)

Maj. Gen. George W. Rice, United States Army (M. C.), was appointed chief health officer on June 16, 1949, vice Col. Samuel D. Avery, United States Army (M. C.), relieved from duty with The Panama Canal.

CHANGES IN ADMINISTRATIVE ORGANIZATION

Department of Finance

By approval of the President under date of May 19, 1948, all fiscal functions of The Panama Canal on the Isthmus of Panama, embracing the Accounting Department, the Paymaster's Office, and the Collector's Office, were authorized to be consolidated, effective July 1, 1948, into a Department of Finance, headed by a Director. Accordingly, on that date, the designation of the Accounting Department and the title of Comptroller were changed to the Department of Finance and Director of Finance, respectively. The offices of the paymaster and collector were consolidated into the new office of treasurer, The Panama Canal, on the same date.

Special Engineering Division

Effective June 30, 1949, the Special Engineering Division was abolished, and such of the operations performed by that unit which were to be continued in the interest of The Panama Canal were transferred to, or absorbed by, other departments and divisions of The Panama Canal.

FORCE EMPLOYED AND RATES OF PAY

The force employed by The Panama Canal and Panama Railroad Company continues to recede from the peak reached during the war period. A total of 22,736 persons was employed by these two agencies as of June 26, 1948, while the force report of June 30, 1949, indicated a total of 21,338, a reduction of 1,398, or 6.1 percent.

The highly diversified activities of the Canal-Railroad organization include scores of different functions and many hundreds of employment categories will be found in the organization. The rates of pay for executive, supervisory, professional, subprofessional, clerical, and other positions in which special educational training or other high qualifications are a requisite are based on equivalent or closely similar rates prevailing for corresponding positions in continental United States. In a second group are included such positions as those occupied by semiskilled workers, helpers, laborers, messengers, and other positions not requiring the services of highly skilled workers or

those requiring special training, technical, or other high qualifications. The rates of pay for employees within this group are based generally upon local prevailing rates. The positions in this group are filled mostly by natives of the areas adjacent to the Canal, although some nationals of many other countries will be found in these positions.

The rates of pay of those persons within the first group referred to in the preceding paragraph are termed "U. S." rates, while the rates of pay for the second group are designated as "local" rates. These designations supersede "gold" and "silver" rates used in last year's report.

Personnel administration in The Panama Canal and Panama Railroad Company on the Isthmus is exercised by the Division of Personnel Supervision and Management.

EMPLOYEES PAID AT U. S. RATES

The force of U. S.-rate employees, including the combined organizations of The Panama Canal and Panama Railroad Company, as of June 30, 1949, numbered 4,779, in comparison with 5,020 as of June 26, 1948, a decrease of 241, or 4.8 percent. The largest numerical decline occurred in the mechanical division, which dropped from 689 last year to 528 on June 30, 1949; this decline was due to a decrease in repair work performed for commercial shipping interests. While most functions reported slightly smaller forces than in the previous year, greater work loads or transfer of functions from one unit to another made small increases necessary in a few of the units.

The number of U. S.-rate employees of The Panama Canal and Panama Railroad Company as of June 30, 1949, and June 26, 1948, with the differences, is shown in the following tabulation:

	As of June 30, 1949	As of June 26, 1948	Decrease
The Panama Canal	4,180	4,392	212
Panama Railroad Company	599	628	29
Total	4,779	5,020	241

The number of employees paid at U. S. rates, by function, will be found in table No. 48, section V.

Additions to and Separations from Force

The following table gives for the Canal-Railroad organization a summary of the additions to and separations from the force paid at U. S. rates for the fiscal year 1949:

	Panama Canal	Panama Railroad	Total
Additions.....	646	77	723
Separations:			
Resignation.....	474	74	548
To enter military service.....	1		1
Reduction in force.....	66	8	74
Termination of temporary employment or reassignment.....	137	1	138
Removal for cause.....	5	1	6
Retirement:			
Age.....	33	4	37
Disability.....	19	7	26
Optional.....	9	1	10
Voluntary.....	4		4
Disability—not qualified for retirement.....	3		3
Displacement.....	14	2	16
Disqualification.....	4	2	6
Inefficiency.....	1		1
Transfer (to other departments of Government).....	6		6
Termination (administration policy of Panama Canal, 5 years' service, age 62).....	3		3
Death.....	7	2	9
Total separations.....	786	102	888
Net separations.....	140	25	165

NOTE.—The above figures do not include 81 employees on a part-time or irregular basis, two United States citizens paid at local rates, or 16 aliens on the U. S.-rate roll.

As the figures of net separations in the table above were taken from the weekly personnel reports, which usually lag about 2 weeks behind the actual termination dates, there is a difference of 76 in the number of net separations and the net decrease in force as shown in the preceding paragraphs under the caption of "Employees Paid at U. S. Rates."

Turn-Over in Force

Based on an average aggregate force of 4,950 and 888 terminations for the year, exclusive of part-time and irregular employees, the total turn-over rate for 1949 of this group of employees was 17.9 percent, as compared with a turn-over rate of 22.3 percent for the fiscal year 1948. Excluding 138 separations by termination of temporary employment or reassignment, the turn-over rate is 15.2 percent for the fiscal year 1949 as against 18.4 percent for the fiscal year 1948. Further excluding 74 separations due to reduction in force, the turn-over rate is 13.7 percent, as compared with 17.4 percent for the fiscal year 1948.

Recruiting

Of the total additions to the force during the fiscal year 1949, 167, or about 23 percent, were effected through United States recruitment, and 556, or about 77 percent, were employed through local recruitment. On the basis of 723 full-time and part-time employments in this group of employees, the recruitment in the fiscal year 1949 represents an accession rate of approximately 15 percent, as compared with accession rate of approximately 16 percent for the previous fiscal year. This

decrease in recruitment may be attributed to the general decline in force and the greater utilization of in-service employees in transfer or reassignment.

At the close of the year there were requisitions pending in the Washington Office for 84 employments. Of these, 35 positions were for the schools division, 29 for the Health Department, and the remainder to fill miscellaneous vacancies.

Adjustment in Wages and Hours of Work

As a result of passage of the Postal Rate Revision and Federal Employees Salary Act of 1948, base pay increases were granted to classified employees and certain groups of related-to-classified employees. Revisions in other United States rates of pay used as bases for similar positions in the Canal-Railroad organization resulted in three upward revisions for craft and craft-supervisory employees, one each for floating equipment and railroad nonoperating employees, two for railroad operating personnel, one for Panama Canal Press craftsmen, one for postal employees, and one for teachers, instructors, and supervisors. No changes in the hours of work were made during the fiscal year 1949

EMPLOYEES PAID AT LOCAL RATES

The force of employees paid at local rates, including those of The Panama Canal and Panama Railroad Company, as of June 30, 1949, numbered 16,559, in comparison with 17,716 as of June 26, 1948, a decrease of 1,157, or 6.5 percent. A general decrease of activity resulted in substantial reductions of force in several of the functions, as well as reductions of lesser significance in many others. In contrast to this general development, there were a few increases, the most significant of which were in the schools division, municipal work, electrical work, and sanitation, all due to increased work loads.

The number of local-rate employees of the Canal-Railroad organization as of June 30, 1949, and June 26, 1948, with the differences, is shown in the following tabulation:

	As of June 30, 1949	As of June 26, 1948	Difference
The Panama Canal.....	10, 811	11, 548	737
Panama Railroad Company.....	5, 748	6, 168	420
Total.....	16, 559	17, 716	1, 157

The number of local-rate employees by function will be found in table No. 49, section V.

Wages of Local-Rate Employees

On September 26, 1948, the wage structure for local-rate employees was increased from 13 to 15 grades, each with 5 in-grade steps. The minimum and maximum rates that resulted were 26 cents and \$1.40 per hour, respectively. The average hourly rate was 47 cents on June 30, 1949.

Sick and Rest Leave

The leave regulations applicable to employees paid at local rates were amended May 1, 1949, as follows: To credit sick and vacation leave at the rate of 1 hour for every 10 hours of service in the basic work week, not to exceed 4 hours leave credit in any 1 week; the maximum allowable accumulation to be 416 hours; previous sick-leave credits, not in excess of 240 hours, to remain available for use as sick leave only until May 1, 1950; compensation to be paid in a lump sum for all accumulated leave (other than sick-leave credits earned prior to May 1, 1949) when an employee is separated from the service. The number of hours of leave for which payment was made during the fiscal year 1949 was 2,541,000.

Cash Relief for Disabled Employees Paid at Local Rates

New applications for relief under the act of Congress of July 8, 1937, averaged 42 per month during the fiscal year 1949, as compared with 32 per month in the fiscal year 1948. The regulations established during the latter part of the fiscal year 1938 for administering this relief were continued without material change.

The table below shows the disposition of all applications for relief benefits from employees of both The Panama Canal and the Panama Railroad Company during the fiscal year 1949:

Applications	Panama Canal	Panama Railroad	Total
On hand July 1, 1948.....	21	7	28
Received during 1949.....	377	129	506
Total.....	398	136	534
Disposition:			
Approved for payment.....	340	110	450
Found ineligible.....	50	20	70
Pending.....	8	6	14
Total.....	398	136	534

NOTE.—Removal from the rolls on account of the death or subsequent reemployment of cash recipients: The Panama Canal, 90; the Panama Railroad Company, 30; Panama Railroad pensioners, 8.

Total and average costs per month during the fiscal year 1949 were as follows:

	Number of cases	Monthly average payment per case	Monthly average payments
Panama Canal rolls.....	1,392	\$21.72	\$30,233.50
Panama Railroad rolls.....	457	20.17	9,218.75
Panama Railroad pensioners ¹	72	13.43	967.00
Total.....	1,921	21.04	40,419.25

¹ Superannuated employees granted cash relief prior to July 8, 1937.

Expenditures on behalf of The Panama Canal cash relief program are paid from annual appropriations for that purpose, while those of the Panama Railroad Company constitute a continuation of the former plan of granting cash relief to the superannuated employees of that company and are paid by the Panama Railroad Company.

Because of the general increase in the cost of living, the value of benefits to annuitants under the act of July 8, 1937 (commonly referred to as the Cash Relief Act), has become progressively smaller; for this reason, legislation has been requested to supersede the cash-relief procedure, other than for the present beneficiaries, and to provide for a simple retirement plan for local-rate employees.

Repatriations

In 1934 an appropriation of \$150,000 was provided for the repatriation and rehabilitation of former local-rate employees (and their families) who have rendered at least 3 years of service with the United States Government or the Panama Railroad Company on the Isthmus. During the fiscal year 1949, \$22,531 was expended for the repatriation and rehabilitation of 247 former members. To the end of the fiscal year 1949 a total of \$128,678 has been expended from this appropriation.

CENTRAL LABOR OFFICE

The central labor office program of The Panama Canal provides for eligibility control over applicants seeking employment with Government agencies and private contractors operating on Government work in the Canal Zone. A general decrease of employment activities is indicated by the comparative figures presented in the following table, showing the total numbers of local-rate employees

carried on the rolls of the various organizations as of June 1949 and June 1948, the decrease in total force being 12.1 percent:

	June	
	1949	1948
Panama Canal and Panama Railroad Company.....	16,559	17,716
U. S. Army.....	3,590	7,472
U. S. Air Force.....	1,871	-----
U. S. Navy.....	2,425	2,788
Government contractors and miscellaneous.....	1,625	1,686
Total.....	26,070	29,662

NOTE.—The figures in this table are based on reports submitted by the various cooperating agencies, which form the basis for prorating the expenses of the central labor office.

Because of the insufficient supply of qualified labor on the Isthmus to handle the heavy construction program carried on during the war emergency, The Panama Canal was forced to resort to the recruitment of contract laborers from the Republic of Colombia, Jamaica, Costa Rica, and El Salvador. With the diminishing need for outside labor after the cessation of hostilities, most of these workers have been repatriated to their native countries. From the inception of the foreign recruiting program in 1940, 22,265 contract workers were brought to the Isthmus, of which 22,180 have been returned to their native countries, leaving as of June 30, 1949, a total of 85 remaining on the Isthmus.

SAFETY PROGRAM

The principal duties of the safety section are the development, improvement, and supervision of adequate safety programs in all functions of the Canal-Railroad organization; to seek out and eliminate the causes of accidents; and through safety education, safety engineering, and the enforcement of safety operating procedures to reduce both the frequency and severity of accidents.

A new low frequency rate was achieved in the fiscal year 1949, representing an improvement of 30 percent in comparison with that in the previous year. The improvement trend of the safety program, started April 26, 1940, has been unbroken except for a slight reversal in 1947. However, during the past fiscal year, 1 permanent total disability case, coupled with an increase of from 13 to 19 in the number of injuries causing permanent partial disability, had the effect of producing a 16-percent increase in severity rate over the previous low, attained during fiscal year 1948.

The following statistics cover the accident rates for the Canal-Railroad organization for the eight full fiscal years since the inauguration of the safety program:

Year	Man hours worked	Lost-time injuries	Frequency rate ¹	Time charges	Severity rate ²	Fatalities
1941.....	72,725,000	5,750	79	214,170	2.94	21
1942.....	92,429,000	4,978	54	238,628	2.58	27
1943.....	94,325,000	3,585	38	230,914	2.45	28
1944.....	80,499,000	2,770	34	158,770	1.97	17
1945.....	70,108,000	2,347	33	90,159	1.29	6
1946.....	61,510,000	1,440	23	81,007	1.32	8
1947.....	51,696,000	1,252	24	79,821	1.54	4
1948.....	45,338,000	1,058	23	56,225	1.24	4
1949.....	40,505,000	663	16	58,479	1.44	4

¹ Frequency rate is the lost-time injuries per million man hours worked.

² Severity rate is the time charges, in days, per thousand man hours worked.

The following table shows injury and death compensation benefits for the Canal-Railroad organization for each of the 9 years since the inauguration of the present safety program, compared with the annual average for the preceding 23 years:

Yearly average	Injury compensation	Compensation per \$1,000 pay roll
23 years 1918 to 1940.....	\$51,886	\$3.31
Fiscal year:		
1941.....	86,290	2.55
1942.....	98,830	2.21
1943.....	104,550	2.17
1944.....	120,037	2.58
1945.....	107,585	2.56
1946.....	109,658	2.78
1947.....	110,899	2.75
1948.....	116,238	3.04
1949.....	106,080	2.70

Thus, the cost of injury and death benefit payments, per \$1,000 of pay-roll expenditures, decreased from \$3.04 in the fiscal year 1948 to \$2.70 in the fiscal year 1949, and is appreciably below the 23-year average of \$3.31. Approximately 90 percent of the compensation payments for 1949, as compared with 81 percent for the previous fiscal year, were for injuries and fatalities occurring in prior fiscal years. Payments on many of these prior cases will continue for several years and, therefore, the compensation rate cannot be expected to decrease during the next few years in proportion to the anticipated decrease in work load. These payments would have been materially higher except for the progress in accident prevention resulting from the inauguration of an effective safety program.

EXPERIMENT GARDENS

The Canal Zone plant-introduction gardens and experiment station were established in June 1923. The gardens, which include green-

houses, nurseries, and experimental plantings, embrace approximately 125 acres of land, and are devoted to the propagation and cultivation of a wide variety of useful and ornamental plants from all parts of the world, primarily for the purpose of determining their adaptability and value under local soil and climatic conditions, for general propagation on the Isthmus. This unit also designs and supervises all landscape work for The Panama Canal and the Panama Railroad Company, and also does landscape work for other government agencies on the Canal Zone. The landscape section was engaged in 39 projects during the year. Plant introduction work was of minor significance during the year, with less than 50 accessions recorded. A few items were purchased from commercial nurseries in the United States for distribution by the nursery unit. The experiment garden, in order to help meet the demand for fresh vegetables, maintains a small, self-supporting vegetable garden.

CLUBHOUSES

The Panama Canal clubhouses unit operates restaurant, motion-picture, bowling, and other recreational facilities for United States Government personnel, their families and guests. The clubhouses are self-supporting and for a number of years no appropriations have been required for these activities.

On April 4, 1949, the Balboa Shops cafeteria, after undergoing extensive alterations and the installation of new equipment, was opened to employees for breakfasts and hot lunches. Previously only sandwiches, pastries, ice cream, and cold drinks were served in this unit.

Complete structural renovations and the installation of many new items of equipment were effected during the year at the Camp Bierd clubhouse. Extensive alteration work providing additional space in the dish-washing section and beneficial changes in other sections of the Ancon clubhouse also were completed during the year, as was the work in connection with installation of new large walk-in refrigerators and improvements of kitchen area at the Cristobal clubhouse.

Upon the completion of extensive alterations the new Pacific clubhouse was opened for business in what was formerly the Tivoli USO building. Public response to the restaurant service and recreational facilities offered at this clubhouse has been more than satisfactory.

Construction of the new air-conditioned Balboa theater was well under way at the end of the year and its completion is scheduled for January 1950.

A diminishing volume of business necessitated the closing of the Diablo Heights clubhouse dining room; the former customers are now

furnished meals at the Diablo Heights restaurant. Further economies were effected by closing the kitchen of the Gamboa, Gatun, Chagres, Paraiso, Red Tank, and Santa Cruz clubhouses, and discontinuing the cafeteria activity of the La Boca restaurant. Prepared food now sold at these clubhouses is being furnished by the Margarita clubhouse on the Atlantic side and by the Diablo Heights restaurant on the Pacific side.

A general decrease in the volume of business has necessitated the curtailment of certain services, the more important of which are enumerated in the preceding paragraphs, enabling a force reduction of full-time employees, and other economy measures.

LEGISLATION

Among the laws enacted by the Congress during the fiscal year 1949 which relate to or apply in the Canal Zone or affect The Panama Canal and which are of importance and interest are those described below:

An act approved July 3, 1948, to provide for permanent postal rates and to provide pay increases for Government employees.

An act approved June 9, 1949, to regulate subsistence expenses and mileage allowances of civilian officers and employees of the Government.

A House resolution, agreed to February 28, 1949, authorizing the Committee on Merchant Marine and Fisheries or a subcommittee thereof to make a full study of the financial operation of The Panama Canal.

Legislation relating to or of interest to the Canal Zone introduced during this fiscal year and still pending in Congress on June 30, 1949, includes:

A Senate resolution (S. Res. 65) to investigate the Panama Canal and interoceanic canals generally.

A bill (H. R. 327) to increase the amount authorized to be appropriated for the erection of a suitable memorial to Maj. Gen. George W. Goethals within the Canal Zone.

Two bills (S. 498 and H. R. 1689) to increase the compensation of the heads of executive departments and independent establishments, including the Governor of The Panama Canal.

Six bills (S. 590, H. R. 1398, H. R. 2140, H. R. 3446, H. R. 4243, and H. R. 5461) to extend the benefits of the Panama Canal construction service annuity law of May 29, 1944, as amended.

A bill (H. R. 990) to amend the Internal Revenue Code so as, among other things, to extend the Federal income tax to Government employees in the Canal Zone.

Two bills (S. 1136 and H. R. 3159) to amend the Canal Zone Code in several respects, principally for the purpose of enacting substantive legislation in support of certain appropriation Act provisions.

Two bills (S. 1137 and H. R. 3158) to amend the Canal Zone Code in reference to several varied subjects.

A bill (S. 1168) to exempt the Panama Railroad Company from the provisions of the Federal Tort Claims Act.

A bill (H. R. 1227) to extend social security and unemployment compensation benefits to certain employees of the Panama Railroad Company.

Two bills (S. 1359 and H. R. 3445) to merge the Canal Zone and Alaska retirement laws with the Civil Service Act as amended.

A bill (S. 1489) authorizing a review of the report on the inter-oceanic canal across Nicaragua contained in a document published by the Seventy-second Congress.

Three bills (S. 1744, H. R. 2277, and H. R. 3107) to amend the Canal Zone Code to provide for a minimum wage.

A bill (S. 1917) to authorize the conversion of the Panama Canal to a sea-level waterway.

Three bills (S. 2061, S. 2072, and H. R. 5172) to create a commission to make studies of the overseas administration of the Federal Government.

Two bills (S. 2008 and H. R. 5182) to consolidate certain hospital, medical, and public health functions, including Panama Canal hospitals, dispensaries, and health services, into a United Medical Administration.

A bill (H. R. 2212) to change the names of Gatun Locks, dam and town to "Sibert Locks," "Sibert Dam," and "Sibert," respectively, in memory of Maj. Gen. William L. Sibert.

A bill (H. R. 2511) to permit vessels engaged in the coastwise trade of the United States to pass through the Panama Canal without payment of tolls.

A bill (H. R. 3191) to amend the Federal Employees' Compensation Act of September 7, 1916, as amended.

A bill (H. R. 4121) to extend the coverage of the Canal Zone Retirement Act to alien and intermittent employees.

A bill (H. R. 4354) to amend the Nationality Act of 1940 to provide for the furnishing of certificates of citizenship with respect to United States citizens born on the Isthmus of Panama.

A bill (H. R. 5219) to provide for the construction of a sea-level ship canal through the Isthmus of Tehuantepec, Mexico.

Section IV

GOVERNMENT

The government of the Canal Zone is conducted as prescribed in the Panama Canal Act of August 24, 1912, and subsequent acts and Executive orders applicable to the Canal Zone. Whenever practicable, governmental functions have been assigned to departments in the organization established for the operation and maintenance of the Canal. Complete cooperation and increased efficiency are derived from such coordination of functions.

Data on expenses and revenues of various features of Canal operation and government are contained in the financial and statistical statement in section V of this report.

AREA OF THE CANAL ZONE

The total area of the Canal Zone¹ as of June 30, 1949, with areas segregated for various purposes, is shown in the table below:

Land area:

	<i>Square miles</i>
Military and naval reservations (inclusive of licenses and assignments):	
Military reservations.....	84. 21
Naval reservations.....	11. 60
Total.....	95. 81
Canal Zone townsites and areas outside of townsites in active use.....	13. 61
Miscellaneous assigned land areas:	
Barro Colorado Island.....	5. 71
Forest preserve (excluding Madden Road).....	5. 38
Cattle pastures.....	39. 90
Commercial licenses.....	4. 97
Total.....	55. 96
Swamps.....	15. 16
Remaining usable land.....	191. 95
Total land area of the Canal Zone.....	372. 49

¹Excludes small tracts (total area 0.83 square mile) which are noncontiguous to main Canal Zone.

Water area:	<i>Square miles</i>
Fresh water	186. 07
Tidewater (Atlantic and Pacific within 3-mile limits)	89. 45
Total	275. 52
Total area of the Canal Zone	648. 01

POPULATION

By compiling information obtained from the chief quartermaster, the land section, the Army, Air Force, and Navy authorities, and by making a house-to-house canvass of persons employed by commercial interests, an estimate was made in March 1949 of the population of the Canal Zone. The estimated population figures include civilian employees of all governmental agencies and their families, and members of the Army, Air Force, and Navy personnel residing in the Canal Zone, but omit uniformed personnel of these services.

The following is a summary of the population by districts:

	Americans			All others			Total
	Men	Women	Children	Men	Women	Children	
Balboa district	4, 622	6, 065	6, 187	4, 837	3, 516	5, 665	30, 892
Cristobal district	1, 223	2, 261	2, 472	3, 209	2, 183	4, 221	15, 569
Total, 1949	5, 845	8, 326	8, 659	8, 046	5, 699	9, 886	46, 461
Total, 1948	6, 094	8, 398	8, 295	8, 709	5, 897	10, 069	47, 462
Total, 1947	6, 319	8, 414	7, 369	9, 250	5, 696	10, 304	47, 352

The total population as of March 1949 showed a decrease of 1,001, or 2.1 percent from that of the previous year.

In addition to the population figures shown above, the records indicated that in March 1949 there were 1,514 Americans (466 men, 492 women, and 556 children) residing in United States Government quarters in New Cristobal, Republic of Panama.

PUBLIC HEALTH

The health of the Canal Zone populace continued relatively good during the year. Excluding malaria and venereal disease, the average number of reportable diseases per month for the year was 36 as compared with 42 during the previous fiscal year, and 72 per month during the fiscal year 1947. Pneumonia, chicken pox, and tuberculosis constituted 67 percent of the total number of cases reported during

the fiscal year 1949, with tuberculosis constituting 10 percent of the total number.

For Panama City, the average number of new cases of communicable diseases per month reported to the chief health officer for the fiscal year 1949 was 27 as compared with 26 per month for the previous fiscal year and 76 per month for the fiscal year 1947. The city of Colon had an average of 6 cases of reportable diseases per month for the fiscal year 1949 compared with 4 and 19 cases, respectively, for the years 1948 and 1947. Chicken pox accounted for 63 percent of the total number of cases reported from Panama City during the year while this same disease accounted for 43 percent of the total number of cases reported from the city of Colon. As many cases of pneumonia, tuberculosis, and whooping cough outside the Canal Zone are not reported unless death occurs, the above comparative figures for reportable diseases of residents of the cities of Panama and Colon exclude these diseases as well as malaria and venereal disease.

The malarial rate for employees of The Panama Canal and Panama Railroad Company for the fiscal year 1949 was 4.6 per thousand as compared with 7.2 for the fiscal year 1948, and 13.3 for the fiscal year 1947.

There were 9 cases of poliomyelitis admitted to Panama Canal hospitals during the fiscal year, one of which subsequently died, as compared with 30 cases in 1948, and 10 cases in 1947. The increase in poliomyelitis in the Canal Zone during the past several years has paralleled the increase in the United States and it continues to be felt that fast, modern transportation between the Isthmus and communities in which the disease is known to be prevalent, constitutes a factor in the occurrence of this disease on the Isthmus.

During the latter part of January 1949, the Health Department was apprised of five deaths due to jungle fever yellow which occurred during the months of November and December 1948 in the vicinity of the town of Pacora, in the interior of the Republic of Panama. Immediate steps were taken to investigate the epidemiological aspects of this yellow fever outbreak and, as a result of this investigation, a long-term yellow fever control program was formulated. This program called for (1) the protective immunization against yellow fever by vaccination of the populations, both urban and rural, throughout the Canal Zone and the Republic of Panama, (2) the development of a program for the complete eradication of the *Aedes aegypti* mosquito from the Canal Zone and the Republic of Panama, and (3) the establishment of an epidemiological service to study the presence of endemic centers and the spread of the disease.

Both the Governments of Panama and of the United States have joined in a coordinated effort, under the supervision of the Health Department, to carry out this program. Since the outbreak was first reported until June 30, 1949, approximately 425,000 vaccinations were performed with an estimated 55,000 vaccinations, principally in the more remote and outlying sections of the Republic of Panama, remaining to be accomplished. *Aedes aegypti* inspections have been made and are being continued throughout the entire Canal Zone and Republic of Panama and wherever foci of breeding are found the towns or villages in the area are treated with a residual of 90-percent wettable powder DDT spray. In order to prevent the reintroduction of the *Aedes aegypti* mosquito, all coastal shipping is inspected and the boats are sprayed at regular intervals.

Laboratory tests are being made of human blood, as well as that of monkeys and other tree animals, for evidence of the presence of yellow fever. Viscerotomy posts have been established to obtain liver specimens from people who have died of an undiagnosed febrile illness lasting 10 days or less. Wherever several jungle or rural deaths of a suspicious nature are reported, a complete epidemiological investigation is made.

Vital Statistics

The morbidity and mortality rates from diseases and injuries, together with the other vital statistics relating to the population of the Canal Zone and the cities of Panama and Colon, are set forth in detail in the report of the Health Department for the calendar year, which is published annually in booklet form. For this reason, the data herein pertaining to vital statistics are limited to a brief résumé of the important information.

General death rates.—The death rate for the Canal Zone is artificially low in comparison with Panama City and Colon, because residence in the Canal Zone is largely restricted to a selective group, i. e., Government employees and members of the armed forces and the immediate members of their families; and because ex-employees generally leave the Isthmus after retirement. No large-scale epidemics occurred in the cities of Panama and Colon. The greater public enlightenment in regard to public health measures and the long-range effect of the over-all sanitation program, together with the development of chemotherapy and the newer antibiotic drugs have been factors in further lowering the abnormally low death^{*} rates

in these two cities. Below are shown death rates by yearly periods for the past five calendar years:

Death rate per 1,000 population—all causes

	Calendar year				
	1948	1947	1946	1945	1944
Canal Zone ¹	6.19	6.00	6.31	5.12	6.13
Panama City.....	7.51	7.96	9.44	9.42	10.57
Colon.....	9.54	9.47	12.00	12.32	11.55

¹ Omits Army, Air Force, and Navy uniformed personnel.

Principal causes of death.—The principal causes of death in each of the groups of population, together with the rate per thousand population, were as follows:

Number of deaths and annual rate per 1,000 population—calendar year 1948

	Number	Rate per 1,000
Canal Zone:		
Tuberculosis.....	11	0.231
Organic diseases of the heart.....	49	1.032
Cancer, all types.....	33	.695
Pneumonia.....	8	.177
Nephritis.....	8	.177
Diseases of the arteries.....	20	.421
Panama City:		
Tuberculosis.....	192	1.348
Organic diseases of the heart.....	125	.873
Cancer, all types.....	98	.684
Pneumonia.....	98	.684
Nephritis.....	52	.363
Apoplexy.....	58	.405
Colon:		
Tuberculosis.....	69	1.314
Organic diseases of the heart.....	51	.971
Cancer, all types.....	32	.609
Nephritis.....	37	.704
Apoplexy.....	37	.704
Diarrhea and enteritis.....	37	.704

Birth rate.—In the Canal Zone a change in the birth rate, as distinct from the number of births, has only limited significance because of the peculiar situation which exists with regard to the population on which the rate is calculated. For the past 8 years, population figures have excluded uniformed personnel of the armed forces, but included members of their families, and children born to armed forces families are included in the total number on which the rate is calculated.

A factor which depresses the birth rate concerns local-rate personnel in the Canal Zone. Canal Zone quarters are generally available only to such employees who have more than average length of service and they and their wives are, therefore, predominately in the older-age brackets.

The following table shows the birth rates in the Canal Zone and the terminal cities of Panama and Colon for the past 5 years:

Birth rate per 1,000 population

	Calendar year				
	1948	1947	1946	1945	1944
Canal Zone: ¹					
White	53.23	55.92	41.69	32.23	32.65
Colored	22.41	19.17	18.92	18.47	19.07
Combined	37.20	36.32	29.42	23.74	24.11
Panama City	29.08	29.26	32.52	32.62	34.03
Colon	38.49	37.47	38.47	38.81	37.45

¹ Canal Zone rates are based on civilian population in each group.

Death rates among children under 1 year of age.—The following table shows the infant mortality rates per 1,000 births for the past 5 years:

Death of infants under 1 year of age per 1,000 live births

	Calendar year				
	1948	1947	1946	1945	1944
Canal Zone:					
White	19	14	17	24	17
Colored	47	45	63	44	43
Combined	27	23	34	34	30
Panama City	61	58	67	72	70
Colon	65	56	71	94	84

Malaria

The rates for malaria among employees only for the past 10 years are shown below:

Calendar year	Rate per thousand	Calendar year	Rate per thousand
1939	14	1944	13
1940	17	1945	13
1941	14	1946	12
1942	25	1947	12
1943	15	1948	6

There was one death from malaria among employees during the calendar year 1948.

Hospitals

The number of patient days in Panama Canal Hospitals for the past three fiscal years was as follows:

Patient days

	Fiscal year		
	1949	1948	1947
Gorgas Hospital.....	204,786	224,610	234,616
Corozal Hospital:			
Insane.....	94,078	92,565	89,600
Cripples and chronic medical and surgical cases.....	37,285	35,012	34,938
Colon Hospital.....	55,762	47,228	52,711
Margarita Hospital.....	(1)	17,282	21,722
Palo Seco Leper Colony.....	41,628	40,606	41,349
Total.....	433,539	457,363	474,936

¹ Closed.

Quarantine and Immigration

During the fiscal year 1949 inspection was made of 4,623 vessels and 4,455 airplanes as compared with 6,325 vessels and 4,821 airplanes in the previous year.

On September 1, 1948, new quarantine rules and regulations were placed in effect whereby vessels or aircraft are exempt from quarantine inspection if, in the current voyage, they have not touched at any port other than those under the control of the United States or in the Republic of Panama. Also, vessels or aircraft are exempt from quarantine inspection if in advance of arrival they have transmitted a duplicate of a free pratique received at a port under control of the United States. Thus under the revised procedures 678 vessels were exempt from quarantine inspection between September 1, 1948, and the close of the fiscal year.

No cases of quarantinable diseases (plague, typhus, yellow fever, smallpox, and cholera) on arriving vessels or airplanes were reported or detected, but constant vigilance was maintained against the introduction of these diseases. On July 4, 1948, a vessel was placed in quarantine because 2 days prior to its arrival at the Isthmus a case of poliomyelitis was removed at Curaçao, and a patient was aboard with a fever of unknown origin. After transiting the Canal the vessel was released from quarantine at sea after diagnosis of the patient removed at Cristobal established that his illness was not caused from a quarantinable disease.

Immediately on receiving the report of several cases of jungle yellow fever in the Republic of Panama, special precautions were instituted to prevent transmission of the disease to other countries.

Planes were disinfected immediately prior to leaving the Canal Zone air terminal, and no passengers from the Pacora area were allowed to embark from the air terminal.

A summary of quarantine and immigration activities will be found in table 50, section V.

MUNICIPAL ENGINEERING

Municipal work carried on during the year included the construction and maintenance of roads, streets, and sidewalks, and the operation and maintenance of the water and sewer systems in the Canal Zone, including reservoirs, filter plants, and pump stations. The maintenance of the water system, sewer system, and the streets in the cities of Panama and Colon, and the furnishing of filtered water to these municipalities, were also handled by the municipal engineering division. Construction work was performed and services rendered for departments and divisions of The Panama Canal, the armed forces, the Government of the Republic of Panama, and for various individuals and companies. Only the major items of this work are commented upon in this report.

Water System

Consumption of filtered water for municipal uses and for sales to vessels during the past three fiscal years is given in the table below. The cities of Panama and Colon, Republic of Panama, used 44 per cent of the total amount consumed.

[Thousands of cubic feet]

	Fiscal year		
	1949	1948	1947
Canal Zone.....	889,562	913,162	939,250
City of Panama.....	553,323	544,053	455,714
City of Colon.....	166,303	171,222	170,935
Sales to vessels.....	18,446	20,550	18,872
Total.....	1,627,634	1,648,987	1,584,771

Regular maintenance work was performed on the pipe lines, reservoirs, filtration plants, and pumping stations during the year. In addition, a number of special projects were completed or in process of completion during the year. The more important items included the replacement of 1,950 linear feet of 6-inch water line from building No. 42 at section "I," Balboa, to the 6-inch water line near building No. 5711, Diablo Heights, with 1,078 linear feet of 8-inch main and 872

linear feet of 10-inch main; the installation of 350 linear feet of 8-inch cast iron main at Balboa Heights; and the replacement of 8-inch unlined water line on Barneby Street, Balboa, with 1,540 feet of 8-inch cement-lined pipe, the latter project including the connection to the new main of 19 house service lines and 8 distribution lines.

Sewer System

Regular sewer maintenance, consisting of cleaning and flushing lines, cutting tree roots, replacing defective pipe, etc., was accomplished during the year.

Roads, Streets, and Sidewalks

Regular maintenance work was performed on the Canal Zone roads, streets, and sidewalks during the year. In addition to this work, there were a number of special road projects, the more important involving the reconstruction of Heights Road and Gorgas Road from the Administration Building, Balboa Heights, to the Gorgas Laboratory, Ancon; a 1,500-foot extension of Limon Road with a 22-foot wide concrete pavement from the mechanical division area to the garbage dump area, Cristobal; and the widening by 2 feet of Bolivar Highway, from Wilson Street to Diversion Road, Cristobal.

Other Heavy Construction Activities

Considerable work including the relocation, extension, and removal of water, sewer, and electric lines, and the relocation and repairing of roads, streets, and sidewalks in connection with the construction of the clinics-auditorium building, Gorgas Hospital, Ancon, was accomplished during the year.

Preparatory work was performed on the improvements scheduled in 1950 for the Thatcher Ferry slips. Work carried forward included the installation of a storage and assembly yard, construction of a timber and pile temporary trestle, and the erection of temporary buildings at the west ferry slip.

Work was completed during the year on a section of Boyd-Roosevelt Highway, extending from Escondido Bridge to Randolph Road, near Cristobal, and measuring 1,150 feet in length and 24 feet in width.

Cities of Panama and Colon

Regular maintenance work was performed on the water and sewer systems, and on the streets and sidewalks during the year. Several improvement projects were completed or in process of completion during the year, the principal ones involving the excavation, grading,

and filling of the Colon stadium area; the installation of sanitary and storm sewers, streets, curbs, and gutters on Avenida Roosevelt, Calle Santa Isabel, Calle "A", Calle 13, and Calle 14, Colon; and the extension of the Melendez Avenue storm-drainage system, Panama City.

Miscellaneous Activities

Sosa Hill quarry and rock crushing plant.—Rock crushed during the fiscal year 1949 and issued to various departments and divisions of The Panama Canal, Panama Railroad Company, units of the armed services, the Republic of Panama, and to individuals and companies, totaled 91,016 cubic yards. In addition, this plant produced approximately 5,016 tons of asphaltic mixtures for placement on street surfaces.

Central mixing plant.—During the year 15,553 cubic yards of ready-mixed concrete were produced.

Concrete pipe plants.—These plants manufactured 2,986 linear feet of various sized concrete pipe, both plain and reinforced, in addition to varying quantities of concrete valve boxes, valve box covers, and cement blocks.

Testing laboratory.—The laboratory continued to make tests as required, including the making of chemical and bacteriological analyses of water, chemical analyses of different materials, concrete tests, tests for determining the suitability of materials and supplies for Canal use, tests to determine the presence or absence of deleterious gases in the holds of ships and oil tanks, soil and permeability tests, etc.

PUBLIC ORDER

During the fiscal year, 7,985 arrests were made, a decrease of about one percent in comparison with the previous year, and a decrease of 10 percent in comparison with the fiscal year 1947. Statistics covering these arrests, with corresponding figures for the two previous years, are given in the following table:

	Fiscal Year		
	1949	1948	1947
	<i>Persons</i>	<i>Persons</i>	<i>Persons</i>
Male	7,366	7,622	8,242
Female	619	457	653
Total	7,985	8,079	8,885
Arrests made with warrants	1,047	953	1,223
Arrests made without warrants	6,938	7,126	7,662
Total	7,985	8,079	8,885
Residents of the Canal Zone	2,739	2,367	2,803
Residents of Panama	4,838	5,342	5,701
Transients	408	370	381
Total	7,985	8,079	8,885

There were 8,438 charges filed against persons arrested during the fiscal year 1949, of which 8,158 were misdemeanors and 280 felonies, the latter representing 3.3 percent of the total offenses charged. The following were the principal causes of arrest:

Cause of arrest (charge)	Fiscal year		
	1949	1948	1947
Violation of traffic regulations.....	5,043	4,848	5,299
Loitering.....	563	669	704
Trespassing.....	584	542	699
Petit larceny.....	337	486	466
Intoxication.....	248	234	295
Disturbing the peace.....	154	178	247
Battery.....	171	161	336
Fugitive from justice.....	212	202	222
Vagrancy.....	302	228	191
All others.....	824	898	1,058
Total.....	8,438	8,446	9,417

Coroner's investigations.—A total of 90 deaths were investigated by the coroner during the fiscal year 1949. Of these 29 required formal reports of inquests which established that 22 were accidental, 2 homicidal, and 5 suicidal.

Prisoners.—During the year the number of prisoners serving sentences in the Canal Zone jails averaged 67.3 per day. All physically able prisoners were employed on useful work.

One hundred and twenty-five convicts were committed to the Canal Zone penitentiary, an increase of 84 as compared with the preceding year. Sentences imposed on these convicts totaled 241 years. Sixty-six convicts were discharged, leaving 145 in custody at the end of the year. Computed at standard rates of pay for common labor the value of the labor performed by convicts during the year amounted to \$74,410. Of this amount, 26 percent represented the value of work performed in the operation, maintenance and improvement of the penitentiary buildings and grounds; 60 percent on the penitentiary farm; and the remaining 14 percent on outside work.

Deportations.—By order of the Governor, 33 persons were deported from the Canal Zone during the fiscal year, of whom 24 were convicts who had served sentences in the penitentiary and 9 were persons whose continued residence in the Canal Zone was regarded as undesirable.

Traffic Accidents

A total of 773 traffic accidents were reported during the fiscal year 1949, as compared with 768 in the previous fiscal year. The most common causes of accidents in the fiscal year 1949 were "reckless driving" and "failure to exercise care and caution in meeting and passing," these accounting for 33 percent of the total. Thirteen

persons were killed and 264 injured in traffic accidents during the fiscal year 1949.

A total of 2,635 traffic violations were disposed of by the traffic violations bureau, which was established in fiscal year 1948.

MAGISTRATES' COURTS

The following is a summary of business transacted at the magistrates' courts for the subdivisions of Cristobal and Balboa for the fiscal year 1949, together with comparative figures for the fiscal year 1948:

	Cristobal		Balboa		Total	
	1949	1948	1949	1948	1949	1948
Cases handled:						
Criminal.....	2,228	2,068	5,400	5,634	7,628	7,702
Civil.....	1	15	29	30	30	45
Total.....	2,229	2,083	5,429	5,664	7,658	7,747
Disposition of criminal cases:						
Conviction.....	2,076	1,885	5,098	5,272	7,174	7,157
Acquittal.....	48	52	74	94	122	146
Dismissal.....	46	58	140	122	186	180
Held for district court.....	58	73	88	146	146	219
Total.....	2,228	2,068	5,400	5,634	7,628	7,702
Convictions in which execution of sentences was suspended and dependents placed on probation.....	94	158	199	219	293	377
Rearrested for violating terms of probation.....	7	11	15	10	22	21
Revenues.....	\$22,629	\$20,269	\$46,687	\$44,690	\$69,316	\$64,959

PARDONS AND REPRIEVES

The Pardon Board, consisting of five members appointed by the Governor, acts in an advisory capacity in the consideration of requests submitted by prisoners for executive clemency. During the fiscal year 1949 the Board considered 40 applications for executive clemency, 34 of which were for commutation of penitentiary and jail sentences and 6 for revocation of orders deporting persons following service of sentences and imprisonment. Recommendations for or against clemency were submitted to the Governor in 39 cases and clemency was extended in 4 of these cases.

Nine other cases were considered by the Board at its meeting on June 29, 1948, and recommendations for or against clemency in connection therewith were submitted to the Governor after the end of the fiscal year 1948. The Governor extended clemency in three of these cases.

Effective March 24, 1949, Mr. E. C. Lombard was relieved from duty on the Board and Mr. F. H. Irwin, who had served as general

alternate, was appointed a member of the Board to succeed Mr. Lombard. On the same date Mr. Paul M. Runnestrand was appointed as alternate for Mr. Paul A. Bentz, Dr. K. O. Courtney was appointed as alternate for Col. S. D. Avery, and Mr. W. R. Rounsaville was appointed as general alternate. Effective June 16, 1949, Col. S. D. Avery was relieved from duty with The Panama Canal, and at the end of the fiscal year the vacancy thus created in the membership of the Board had not been filled.

FIRE PROTECTION

During the year 334 fires were reported involving property value of \$27,258,213, and caused damage estimated at \$99,698. In addition to the fires reported, the fire section responded to 42 false alarms, 18 emergency calls, 17 alarms at which the fire had been extinguished before the arrival of the fire department, and 2 requests from the Army to cover-in at an Army fire station during the absence of the Army fire equipment.

The following table classifies the owners who suffered property losses during the year, as compared with the previous year:

	Fiscal year 1949		Fiscal year 1948	
	Number of fires	Property loss	Number of fires	Property loss
The Panama Canal.....	208	\$4,426	247	\$26,010
Panama Railroad Company.....	45	921	21	569
U. S. Army.....	8	2,168	6	575
U. S. Navy.....	1			
Private (including ships).....	72	92,183	45	211,132
Total.....	334	99,698	319	238,286
Total property involved.....		\$27,258,213		\$13,094,242

PUBLIC SCHOOL SYSTEM

The public-school system for white children includes 8 kindergartens; 9 elementary schools, grades 1 through 6; 2 junior high schools, grades 7 and 8; 2 senior high schools, grades 9 through 12; an apprentice school; and a junior college. Public schools for colored children include 6 kindergartens; 7 elementary schools, grades 1 through 6; five 3-year junior high schools, grades 7 through 9; 2 occupational high schools, grades 10 through 12; and a 2-year normal training school.

The schools for white children operate on a 9-month basis, while the schools for colored children are open 10 months each year. February enrollments are used for purposes of comparison, since they usually represent the enrollment peaks. In February 1949, 4,509 pupils were enrolled in the white elementary and secondary schools

and 3,277 in the colored schools, compared with 4,219 and 2,973, respectively, in February 1948. The kindergarten enrollments were 691 white and 274 colored in February 1949, as compared with 549 and 206, respectively, in February 1948.

For the past 3 years the average daily attendance has been as follows:

	Fiscal year		
	1949	1948	1947
White schools	4,244	3,978	3,625
Colored schools	3,104	2,816	2,791

NOTE.—Junior college and kindergartens not included.

February enrollments of day-time students in the Canal Zone Junior College numbered 195 as compared with 173 in February 1948. The extension division of this school offered adult courses during three terms, viz., October 1, 1948, through January 31, 1949; February 1, 1949, through May 31, 1949; and June 13, 1949, through August 4, 1949. This division served a total of 1,807 individuals, not including duplications, or about 800 more than enrolled in any previous year.

During the school year the white schools, not including the apprentice school, were in session 178 days and the colored schools 200 days. At the close of school in June 1949, 184 white teachers, including 10 Junior College instructors and 8 supervising teachers in the occupational high schools, and 121 colored teachers, including 2 teacher-clerks, were in regular employment in these schools.

The achievement tests which have been administered in March or April to pupils of grades 1 through 8 in white and colored schools for many years and which have been used as a means of comparison between Canal Zone pupils and those in the United States, were postponed until September in the colored schools and October in the white schools. It is believed that this change will (1) lessen the influence of test materials on the courses of study, (2) remove unfavorable tensions, and (3) have the further advantage that any serious scholastic deficiencies disclosed by these tests will be made known to the teacher at the beginning rather than near the end of the school year.

In the white high schools the median pupil scored at the 64th percentile on United States norms provided for the tests. The comparative scoring last fiscal year was at the 67th percentile.

The general curriculum-revision program begun in 1948 was continued. All teachers in both white and colored schools were organized into study groups for the purpose of acquainting themselves with modern educational thought in the fields of educational psychology,

sociology, philosophy, and of school practice. Each group made a study of three outstanding books in the above fields and recorded its recommendations for curriculum revision. These recommendations will be considered as aims and procedures come under study in succeeding steps in the program.

Work was begun but not completed during fiscal year 1949 on the construction of study-hall buildings at the Silver City and La Boca occupational high schools. Six additional classrooms, made necessary by expanding enrollments, were under construction in the basement area of the Silver City occupational high school at the close of this fiscal year.

Physical education classes for both white and colored pupils are conducted by the personnel of the physical education and recreation section. In addition, personnel from this section provide leadership and guidance for the Boy and Girl Scout organizations on the Isthmus and supervise such sports and recreational activities as baseball, basketball, handball, football, tennis, boxing, fencing, archery, athletic meets, swimming, and water safety.

POSTAL SYSTEM

Twenty-three post offices were operated by the Bureau of Posts during the fiscal year 1949. Of these 11 were in civilian localities, 6 in Army localities, 3 in Air Force bases, and 3 in Naval reservations.

Operations for the past 3 years are summarized in the following table:

	Fiscal year		
	1949	1948	1947
Receipts:			
Sale of air mail postage.....	\$381,394	\$353,742	\$441,696
Sale of other postage stamps, postal cards, stamp books, etc.....	218,743	182,236	206,526
Money order fees.....	52,134	40,908	42,770
Box rents collected.....	49,650	46,115	35,287
Handling mail—other agencies.....	12,300	12,300	12,300
Other receipts.....	1,673	1,512	1,317
Total receipts.....	715,894	636,813	739,896
Expenses:			
Transportation charges for air mail.....	168,705	161,989	210,026
All other charges and expenses.....	664,951	608,994	630,334
Total expenses.....	833,656	770,983	840,360
Net surplus (deficit).....	(117,762)	(134,170)	(100,464)
Transferred from postal savings interest account.....		200,000	
Reported surplus (deficit).....	¹ (117,762)	65,830	¹ (100,464)

¹ These yearly operating deficits were absorbed by reserve funds.

Statistics relative to the operation of the Canal Zone postal system for the past three fiscal years are covered in the following table:

	Fiscal year		
	1949	1948	1947
Registered and insured articles handled:			
Sent.....	141,392	148,937	194,261
Received.....	175,231	175,820	199,318
Dispatches of steamship mail handled:			
Cristobal:			
Number sent.....	3,124	1,943	2,233
Number received.....	3,059	973	1,668
Balboa:			
Number sent.....		173	957
Number received.....	135	240	825
Dispatches of air mail handled—Balboa:			
Sent.....	19,864	21,702	19,924
Received.....	21,419	21,646	20,478

NOTE.—Effective October 1, 1947, the dispatching of surface mail for Central and South America from Balboa was discontinued and that function transferred to the Cristobal exchange office.

IMMIGRATION VISAS

During the fiscal year, 247 visas were issued by the executive secretary to alien residents of the Canal Zone traveling to the United States. Of these, 8 were quota immigration visas, 129 were nonquota immigration visas, 68 were nonimmigrant visas, and 42 were transit certificates. Fees collected for visas amounted to \$1,408.

RELATIONS WITH PANAMA

Because of the close relations existing between the Governments of the Canal Zone and the Republic of Panama and the proximity of the two areas, numerous matters of mutual interest arise continually. During the year, correspondence and discussions pertaining to the transaction of matters of this kind were conducted between representatives of The Panama Canal and the Panamanian Government. The majority of these matters related generally to such subjects as customs, immigration, repatriation of aliens, municipal improvements, public health, postal service, letters rogatory and extradition.

CUSTOMS

The following is a statistical summary of the more important items handled by the Customs during the fiscal year 1949, together with corresponding figures for the two preceding years:

Item	Fiscal year		
	1949	1948	1947
Vessels entered.....	12, 558	12, 204	10, 574
Vessels cleared.....	12, 574	12, 205	10, 557
Aircraft entered.....	3, 824	4, 344	5, 123
Aircraft cleared.....	3, 825	4, 346	5, 120
Customs releases on shipments consigned to Panama.....	7, 710	8, 191	6, 420
Shipments of household goods of employees, inspected and sealed for shipment to United States.....	2	4	68
Invoices certified for shipment to United States.....	1, 380	1, 073	1, 061
Chinese passengers arriving.....	137	¹ 84	14
Chinese admitted to Panama.....	20	42	7
Vessels with Chinese crews checked.....	1, 051	894	682

¹ Corrected figure.

SHIPPING COMMISSIONER

The shipping commissioner and his deputies have the same authority with respect to United States seamen as shipping commissioners in United States ports and United States consuls in foreign ports. Eight sick or destitute seamen were maintained and returned to the United States at the expense of the appropriation for the relief of destitute American seamen, and 152 were signed on vessels as work-aways, and returned to the United States without expense to the Government.

The total wages earned by seamen who were discharged at Canal Zone ports amounted to \$203,761, and the total approved for deductions on account of advances, allotments, fines, slop-chest account, etc., was \$81,291. The balance of \$122,470 was either paid to seamen under the supervision of the deputy shipping commissioners or received on deposit for the seamen by the deputy shipping commissioners. The wages, money, and effects of two American seamen, one of whom died in the Canal Zone and one at sea, were handled by the shipping commissioner during the year. Their personal effects and cash, amounting to \$256, were remitted to the proper courts for disposition. The unclaimed wages of one seaman were deposited with the treasurer, The Panama Canal, as provided by law.

ADMINISTRATION OF ESTATES

The public administrator takes charge of all estates requiring administration within the Canal Zone that are not handled by others legally entitled to administer them. In the case of estates with total assets exceeding \$1,000 in value, the public administrator charges the regular commissions fixed by law, which are paid into the Treasury of the United States. Commissions amounting to \$5,360 were collected during the fiscal year. The estates of 188 deceased or insane persons, with cash assets of \$152,811, were settled during the fiscal year.

FOREIGN CORPORATIONS

Foreign corporations doing business in the Canal Zone are required to have licenses, and 144 such corporations, the majority of which were steamship lines, steamship agencies, and Government contractors, were licensed during the fiscal year 1949. Fees amounting to \$1,440 were collected.

INSURANCE

The license fee for insurance companies doing business in the Canal Zone is \$10 per year plus a tax of $1\frac{1}{2}$ percent on premiums collected. At the end of the fiscal year 27 insurance companies were licensed to write insurance in the Canal Zone.

Life-insurance companies reported that as of December 31, 1947, 2,079 policies were in force. During the calendar year 1948, 1,192 policies were issued and 299 canceled, leaving 2,972 with an aggregate face value of \$9,684,542 in force as of December 31, 1948. Premium collections on life-insurance policies during the calendar year 1948 totaled \$284,172. Claims settled during the year totaled \$88,170.

During the calendar year 1948 the premiums received by miscellaneous insurance companies, including accident, automobile liability, fire, surety, fidelity, etc., but excluding life insurance, amounted to \$592,914. Losses paid during the year totaled \$133,933.

The tax of $1\frac{1}{2}$ percent on premiums collected by all classes of insurance companies amounted to \$13,156 for the calendar year 1948, as compared with \$8,949 during the previous year.

LICENSES

The number of motor-vehicle licenses and transfers issued during each of the past three fiscal years and the aggregate fees collected therefor are summarized below. These include licenses for official vehicles for which no charge is made:

	Fiscal year		
	1949	1948	1947
Vehicle licenses issued.....	27,958	24,674	22,007
Motor-vehicle transfers.....	7,744	7,311	6,940
Total.....	35,702	31,985	28,947
Fees collected.....	\$134,562	\$128,741	\$118,166

In addition to the vehicle licenses covered above, several other types of licenses were issued, such as chauffeurs' licenses, peddlers' licenses, etc.

COMMERCIAL AVIATION

During the fiscal year 1949, practically all of the civil aviation within the Canal Zone was confined to aircraft of the United States scheduled air carriers. During the first half of the year the numbers of aircraft and passengers utilizing the Canal Zone air terminal remained fairly steady with a slight increase occurring during the second quarter. In the latter half of the year there was a slight decrease in the number of aircraft, but an increase in the number of passengers, caused by the use of larger aircraft on scheduled operations. This resulted in some consolidation in the frequency of schedules but also increased the passenger load factor.

Throughout the year the air lines continued their policy of scheduling a high percentage of through flights between South America and the United States, thereby weakening to some extent the traditional position of the Canal Zone as the cross roads for Latin American air travel. Although these factors caused a change in the physical handling of aircraft, passengers, mail and cargo, the actual volume remained as great as during the previous fiscal year.

During the latter part of the year a bilateral civil aviation agreement was consummated between the United States and the Republic of Panama, which provides for the transfer of all civil aviation within the Canal Zone to the Republic of Panama at some future date.

Tabulated below is a statistical summary of commercial aviation activities in the Canal Zone for the fiscal year 1949, as compared with the two previous years:

NUMBER OF PASSENGERS CARRIED BY REGULARLY SCHEDULED AIRLINES

	Fiscal year		
	1949	1948	1947
Incoming.....	65,603	61,583	68,743
Outgoing.....	64,392	59,326	71,912
Total.....	129,995	120,909	140,655

AIR EXPRESS AND MAIL ¹

[Thousands of pounds]

Entered.....	3,318	2,524	3,114
Cleared.....	2,990	2,356	2,846
Total.....	6,308	4,880	5,960

¹ Includes transshipped cargo which entered and cleared; excludes weight of transfer mail which does not reach or pass through Canal Zone post offices.

NUMBER OF AIRCRAFT ENTERED OR CLEARED

Entered.....	3,824	4,344	5,123
Cleared.....	3,825	4,346	5,120

Section V

FINANCIAL AND STATISTICAL STATEMENTS

Financial statements of major interest relative to The Panama Canal, abstracted from the annual report of the Department of Finance, are presented in this section. Also included are tables concerned with traffic through the Canal, and other features of Canal operation.

ACCOUNTING SYSTEM

Accounts are maintained in accordance with accepted principles of appropriation and fund accounting for governmental bodies. However, the activities being of a quasi-business nature, the accounting system has been adapted to conform as nearly as practicable to the principles and practices approved by the Interstate Commerce Commission and State boards regulating public utilities as well as to procedure followed by comparable industries in the corporate field.

For purposes of evaluating the investment, the close of the construction and development period of The Panama Canal was fixed as July 12, 1920, the date on which the Canal was formally declared open to commercial traffic by Presidential proclamation.

Considered as properly chargeable to construction costs, and so reflected in the capital investment account, are interest amounting to \$128,991,063 on United States Treasury funds advanced up to July 12, 1920, and the treaty payments to the Republic of Panama consisting of a \$10,000,000 payment in 1904 and annual payments of \$250,000 totaling \$2,000,000 for the period 1913–20. Subsequent annual payments are reflected in the operating accounts. A provision in the Treaty of 1936 with the Republic of Panama increased the annual payment to \$430,000 retroactive to 1934.

Subsequent to the fiscal year 1920, a potential capital interest return of 3 percent has been considered as an unrecorded charge to expenses in determining computed surplus or deficit, while net revenues before interest charges have been used to calculate the actual rate of return on net capital investment.

Based on the foregoing, the gross capital investment at the beginning of the fiscal year 1949 was \$724,872,211.22, which, after deducting

depreciation of \$55,852,266 and special item projects and additional facilities (third locks) amounting to \$146,063,787.50, leaves a net capital investment of \$522,956,157.72. For the fiscal year 1949 there was a net deficit of \$472,584.33 from operations of the Canal and a net revenue of \$1,006,959.04 from business operations, or a net revenue on combined operations of \$534,374.71.

OPERATIONS OF THE PANAMA RAILROAD COMPANY

The results from the operations of the Panama Railroad Company's various business units on the Isthmus are shown in detail in the accounts of the Panama Railroad Company. The detailed statement of revenues, expenses, and statistics for all railroad industries, changes in the capital account, and the results from operations of the steamship line appear in the annual report of the Panama Railroad Company. A review of these activities is presented in section II of this report under the heading "Business operations under the Panama Railroad Company."

PANAMA CANAL OPERATIONS

The major financial results of Panama Canal operations are presented hereinafter in tables Nos. 1 to 28, with supplementary comments and explanations. Data on Canal traffic and other features of Canal operation are found in tables Nos. 29 to 50.

The complete report for the Department of Finance, including tables and reports not printed herein because they are concerned principally with details of operations which lack general interest, is on file at the office of the Governor and at the Washington office of The Panama Canal.

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TABLE No. 1.—*Comparative balance sheet*

Assets	June 30, 1949	June 30, 1948	Liabilities	June 30, 1949	June 30, 1948
CURRENT ASSETS			CURRENT LIABILITIES		
Cash (table No. 2).....	\$15,432,887.84	\$18,891,720.99	Accounts payable (table No. 14).....	\$4,589,168.08	\$5,393,092.45
Accounts receivable (table No. 3).....	2,049,166.40	2,320,299.95	Profits of business operations (table No. 15).....	845,370.44	1,382,457.88
Materials and supplies (table No. 4).....	12,822,149.35	10,841,644.19	Unliquidated obligations (table No. 16).....	3,353,304.91	1,054,242.69
Work in progress (table No. 5).....	299,396.76	329,907.81			
Total current assets.....	39,603,600.35	32,383,572.94	Total current liabilities.....	8,787,843.43	8,029,793.02
Deferred debits (table No. 6).....	316,170.52	153,470.68	Deferred credits (table No. 17).....	131,904.25	1,283,231.36
Custodial funds (per contra) (table No. 7).....	13,841,321.48	15,035,273.95	Custodial funds (per contra).....	13,841,321.48	15,035,273.95
			Total liabilities.....	22,761,069.16	24,348,298.33
CAPITAL ASSETS			<i>Equity of U. S. Government</i>		
Depreciable assets:			OBLIGATED BALANCES—APPROPRIATED FUNDS		
Buildings and structures (general) (table No. 8).....	112,086,991.50	109,193,181.66	For repairs: Floating plant and business equipment (table No. 18).....	640,075.64	439,278.65
Floating plant (table No. 9).....	14,475,810.95	13,199,254.15	For replacement: Floating and business operations plant (table No. 19).....	4,777,835.77	3,852,226.20
Business operations structures (table No. 10).....	53,065,891.41	46,704,134.07	For accrued leave (table No. 20).....	743,949.65	939,869.70
Business operations equipment (table No. 11).....	6,997,485.76	5,354,256.55	For current operations and incomplete construction.....	5,780,377.46	7,817,097.37
Total depreciable assets.....	186,626,179.62	174,450,826.43	For postal operations.....	57,784.67	175,547.32
Less: Accrued depreciation (table No. 12).....	58,859,595.15	55,852,246.00	Total obligated balances—appropriated funds.....	12,000,023.19	13,224,019.24
Net depreciable assets.....	127,766,584.47	118,598,580.43			
Nondepreciable assets (table No. 13).....	396,380,372.13	394,357,597.29	CAPITAL INVESTMENT		
Subtotal.....	524,146,956.60	512,956,157.72	Net capital investment (tables 8 to 13).....	524,146,956.60	512,956,157.72
Special item projects.....	68,857,973.48	69,448,907.67	Working capital (table No. 21).....	10,000,000.00	10,000,000.00
Additional facilities.....	70,043,285.27	76,614,879.83	Subtotal.....	534,146,956.60	522,956,157.72
Total capital assets.....	663,048,215.35	659,019,945.22	Special item projects and additional facilities.....	138,901,288.75	146,063,787.50
Total.....	707,809,307.70	706,592,262.79	Total capital investment (table No. 22).....	673,048,215.35	669,019,945.22
			Total.....	707,809,307.70	706,592,262.79

The foregoing balance sheet conforms closely to the generally accepted presentation of corporate balance sheets. This balance sheet presents the equity of the United States Government, consisting of the capital investment, including working capital, and the obligated balances of appropriated funds. The equivalent of the item captioned "Balance, Revenues and Refundments" on the balance sheet in prior years is reflected in the accounts mentioned above as well as in the current liabilities and custodial funds contra account.

The statutes require that receipts for tolls, civil revenues, and net profits on business operations shall be covered into the United States Treasury and relinquished from control of The Panama Canal. Funds for current operating expenses and capital construction are appropriated by the Congress, and for comparative purposes are considered as provided from the tolls and other receipts covered into the Treasury. Practically all receipts other than those cited above are repayable to Canal appropriations and may be reexpended, but as the Canal is deprived of tolls revenue, its principal source of income, the reexpendable receipts are insufficient to provide for operation and maintenance, thus requiring the Canal to submit its expenditure program annually to the Congress.

These various fund requirements leave The Panama Canal balance sheet without an equivalent for the usual corporate "Surplus Account," since any surplus is included in the tolls covered into the Treasury by law. However, the equivalent for "Surplus Account" is shown on table No. 24, which compares "Net Revenues" of \$273,906,731.30, representing the accumulated operating earnings of The Panama Canal before capital interest charges, with the computed interest on the net capital investment, by fiscal years, beginning with 1921, but no interest charge against the Canal is actually made by the United States Treasury.

REPORT OF THE GOVERNOR OF THE PANAMA CANAL

TABLE No. 2.—Appropriated funds, receipts, and disbursements, fiscal year ended June 30, 1949

ACCOUNTABLE BALANCE JULY 1, 1948, BY APPROPRIATIONS AND FUNDS					
	Disbursing clerk, Washington, D. C.	Treasurer, Canal Zone	Collecting agents, Canal Zone	Total	United States Treasury
Maintenance and operation, Panama Canal	\$956,110.21	\$3,408,300.08	\$11,006.25	\$1,375,416.54	\$11,174,015.85
Sanitation, Canal Zone, Panama Canal	49,911.21	500,860.57	3,434.38	553,206.16	304,476.04
Civil government, Panama Canal and Canal Zone	15,606.75	277,740.56	3,374.18	293,721.49	14,032.03
Postal funds, Canal Zone (special funds)	6,670.51	82,299.04	4,276.86	93,246.41	388,753.27
Repatriation of unemployed aliens, Panama Canal		19,013.54		19,013.54	25,000.00
Memorial to Maj. Gen. George W. Goethals					44,015.54
Construction, additional facilities, Panama Canal	56,175.20	325,504.67	33.78	381,713.65	156,508.58
Working fund, Panama Canal—Hospitalization of military personnel		45,836.00		45,836.00	1,300,891.00
Judgments, Court of Claims, Panama Canal (salaries)					45,836.00
Total	1,084,473.88	4,659,556.46	19,125.45	5,763,155.79	13,128,565.20
APPROPRIATIONS, FISCAL YEAR 1949					
Maintenance and operation, Panama Canal					
Sanitation, Canal Zone, Panama Canal					13,149,000.00
Civil government, Panama Canal and Canal Zone					4,200,000.00
Construction, additional facilities, Panama Canal					3,277,313.00
Total					100,000.00
TRANSFERS BETWEEN FISCAL OFFICERS					
Maintenance and operation, Panama Canal	11,500,000.00	4,165,651.90		15,665,651.90	265,689.82
Sanitation, Canal Zone, Panama Canal	525,000.00	3,454,766.15		3,979,766.15	100,849.60
Civil government, Panama Canal and Canal Zone	130,060.00	3,158,499.69		3,288,499.69	14,333
Postal funds, Canal Zone (special fund)	20,000.00	743,303.06		763,303.06	689,320.76
Repatriation of unemployed aliens, Panama Canal		15,000.00		15,000.00	15,000.00
Construction, additional facilities, Panama Canal		300,359.26		300,359.26	2,092.70
Working fund, Panama Canal—Hospitalization of military personnel	21,892.00	168,750.00		190,642.00	190,632.00
Total	12,196,882.00	12,006,330.06		24,203,212.06	1,248,599.21
COLLECTIONS REPAYABLE TO APPROPRIATIONS					
Maintenance and operation, Panama Canal					
Sanitation, Canal Zone, Panama Canal					51,239.99
Civil government, Panama Canal and Canal Zone					555.88
Postal funds, Canal Zone (special fund)					295,891.57
Repatriation of unemployed aliens, Panama Canal					717,993.66
Construction, additional facilities, Panama Canal					50.00
Working fund, Panama Canal—Hospitalization of military personnel					61,894.68
Total					168,750.00
Total to be accounted for					25,451,811.27
APPROPRIATIONS, FISCAL YEAR 1949					
Maintenance and operation, Panama Canal					
Sanitation, Canal Zone, Panama Canal					23,527,734.52
Civil government, Panama Canal and Canal Zone					1,080,903.46
Postal funds, Canal Zone (special fund)					295,891.57
Repatriation of unemployed aliens, Panama Canal					717,993.66
Construction, additional facilities, Panama Canal					50.00
Working fund, Panama Canal—Hospitalization of military personnel					61,894.68
Total					168,750.00
Total to be accounted for					25,753,217.89
APPROPRIATIONS, FISCAL YEAR 1949					
Maintenance and operation, Panama Canal					
Sanitation, Canal Zone, Panama Canal					35,155,274.01
Civil government, Panama Canal and Canal Zone					91,823,063.15
Postal funds, Canal Zone (special fund)					
Repatriation of unemployed aliens, Panama Canal					
Construction, additional facilities, Panama Canal					
Working fund, Panama Canal—Hospitalization of military personnel					
Total					

COVERED INTO THE UNITED STATES TREASURY

Business net revenues, fiscal year 1948, maintenance and operation, Panama Canal

1,582,457.88

TRANSFERS BETWEEN FISCAL OFFICERS

Maintenance and operation, Panama Canal
 Sanitation, Canal Zone, Panama Canal
 Civil government, Panama Canal and Canal Zone
 Postal funds, Canal Zone (special fund)
 Repatriation of unemployed aliens, Panama Canal
 Construction, additional facilities, Panama Canal
 Working fund, Panama Canal—Hospitalization of military personnel

1,582,457.88

DISBURSEMENTS

Maintenance and operation, Panama Canal
 Sanitation, Canal Zone, Panama Canal
 Civil government, Panama Canal and Canal Zone
 Postal funds, Canal Zone (special fund)
 Repatriation of unemployed aliens, Panama Canal
 Construction, additional facilities, Panama Canal
 Working fund, Panama Canal—Hospitalization of military personnel
 Judgments, Court of Claims, Panama Canal (salaries)

1,582,457.88

ACCOUNTABLE BALANCE JUNE 30, 1940

Maintenance and operation, Panama Canal
 Sanitation, Canal Zone, Panama Canal
 Civil government, Panama Canal and Canal Zone
 Postal funds, Canal Zone (special fund)
 Repatriation of unemployed aliens, Panama Canal
 Memorial to Maj. Gen. George W. Goethals
 Construction, additional facilities, Panama Canal
 Working fund, Panama Canal—Hospitalization of military personnel

1,582,457.88

Total accounted for

1,582,457.88

1 Former functions paymaster, Canal Zone, and collector, Canal Zone, were consolidated under treasurer, Canal Zone, effective July 1, 1948.

TABLE No. 3.—*Accounts receivable*
REGISTERED DURING FISCAL YEAR—

	1949	1948
Repaid to appropriations:		
Panama Railroad Company.....	\$3,396,380.94	\$3,699,052.66
Other departments of the United States Government.....	188,028.80	313,355.69
Individuals and companies.....	15,350,873.70	15,596,825.22
Total.....	18,935,283.44	19,609,233.57
Miscellaneous receipts:		
Tolls.....	20,618,718.00	20,022,377.70
Other.....	5,291.06	
Total.....	20,624,009.06	20,022,377.70
Total accounts receivable registered.....	39,559,292.50	39,631,611.27
Number of bills registered.....	46,341	53,267

ACCOUNTS RECEIVABLE END OF FISCAL YEAR—

Audited bills.....	\$1,920,213.79	\$2,234,006.52
Hospital certificates.....	33,997.20	71,182.41
Injury compensation.....		10,195.48
Drums, carboys, reels, and cylinders returned for credit.....	696.00	4,689.81
Bills for rent and related charges.....	654.57	225.73
Pay roll deductions.....	93,604.84	
Total.....	2,049,166.40	2,320,299.95

TABLE No. 4.—*Materials and supplies*

	Fiscal year 1949	Fiscal year 1948
Stock on hand, first of year:		
Balboa store.....	\$5,064,761.41	\$6,051,966.45
Medical store.....	308,298.03	320,504.38
Administration Building store.....	52,740.64	60,776.65
Gamboa store.....	1,765,604.38	1,807,676.37
Cristobal store.....	1,244,879.53	1,451,136.36
Locks store.....	627,059.00	564,456.43
Oil-handling plants.....	432,898.64	656,158.97
Panama Canal press.....	374,757.45	307,591.68
Sand and gravel pile.....	135,324.80	33,546.87
Division stores.....	1,747,690.86	1,758,788.34
Total stock value.....	11,754,014.74	13,012,602.50
Reserve for inventory adjustments.....	912,370.55	1,102,991.16
Book value of stock on hand.....	10,841,644.19	11,909,611.34
Receipts of material:		
Purchases for stock.....	9,079,040.09	6,957,766.13
Purchases for divisions.....	3,088,876.13	2,957,447.04
Local production.....	720,053.36	752,150.77
Book value of receipts.....	12,887,969.58	10,667,363.94
Total charges to stock.....	23,729,613.77	22,570,975.28
Issues and sales of material:		
Issues to Canal divisions.....	2,714,569.73	3,685,035.88
Issues to business divisions.....	6,333,996.05	4,958,166.07
Less: Returns to stock.....	(113,131.57)	(157,090.28)
Returns for resale to outsiders.....	(221,898.66)	(380,399.72)
Net issues to divisions.....	8,713,535.55	8,105,711.95
Sales.....	2,680,604.78	3,703,526.53
Total issues and sales.....	11,394,140.33	11,809,238.48
Price adjustments.....	(2,505.17)	105,615.74
Inventory adjustments.....	(126,376.77)	
Variation in division stores.....	(46,047.32)	11,097.48
Variation in reserve for inventory adjustments.....	(311,746.65)	(190,620.61)
Total credits to stock.....	10,907,464.42	11,735,331.09

Note.—Figures in parenthesis denote deduction.

TABLE NO. 4.—*Materials and supplies*—Continued

	Fiscal year 1949	Fiscal year 1948
Stock on hand, end of year:		
Balboa store.....	\$5,803,115.63	\$5,064,761.41
Medical store.....	371,466.51	308,298.03
Administration building store.....	46,576.67	52,740.64
Gamboa store.....	1,828,041.44	1,765,604.38
Cristobal store.....	1,367,547.48	1,244,879.53
Locks store.....	709,034.29	627,059.00
Oil-handling plants.....	1,079,950.77	432,898.64
Panama Canal press.....	301,195.40	374,757.45
Sand and gravel pile.....	121,806.88	135,324.80
Division stores.....	1,793,738.18	1,747,690.86
Total stock value.....	13,422,773.25	11,754,014.74
Reserve for inventory adjustments.....	600,623.90	912,370.55
Book value of stock on hand.....	12,822,149.35	10,841,644.19

In the foregoing table, the values of stock on hand at the beginning and end of the year and receipts and issues of material are shown at invoiced cost plus an amount for procurement to cover United States inland freight, ocean freight, and purchase and inspection expense.

TABLE NO. 5.—*Work in progress*

	June 30, 1949	June 30, 1948
Electrical division.....	\$531.63	\$1,500.56
Municipal division.....		88.80
Shops and dry docks.....	267,887.24	311,606.19
Motor transportation division.....	13,784.74	5,075.75
Building division.....	355.37	(244.84)
Panama Canal press.....	16,837.78	11,881.35
Total work in progress.....	299,396.76	329,907.81

NOTE.—Figures in parentheses denote credit balance

This account covers the amounts expended on uncompleted jobs, and will ultimately be cleared to operating expenses of the division indicated, with corresponding credits to their revenues after application of authorized charges to cover division overhead expense.

TABLE NO. 6.—*Deferred debits*

	June 30, 1949	June 30, 1948
Office of engineer of maintenance.....	\$179.97	
Pacific locks.....		\$6,407.50
Port captain, Balboa.....	787.00	
Aids to navigation.....	658.73	
Dredging division.....	3,846.55	5,540.27
Transportation of employees on the Isthmus.....	2,059.07	(1,325.70)
Offices in the United States.....		17.33
General accounts, suspense.....	3,492.42	3,491.42
Gorgas Hospital.....	15,512.69	26.03
Colon Hospital.....	4,730.00	
Corozal Hospital.....	1,848.80	
Palo Seco Leprosarium.....	101.80	
Quarantine and immigration.....	151.00	
Sanitation.....		541.28
Schools.....	130.00	
Special engineering division.....	309.80	2,026.54
Electric power system.....	635.14	31,689.55
Water system.....		1,294.10
Municipal work.....	820.41	5,076.89
Mechanical division.....	83,997.38	62,833.58
Oil-handling plants.....		(803.08)
General storehouses.....		(116.48)
General storehouses, sundries suspense.....	179,732.51	10,808.44

TABLE No. 6.—*Deferred debits*—Continued

	June 30, 1949	June 30, 1948
Motor transportation division.....		(\$4.96)
Building division.....	\$16,871.25	23,005.44
U. S.-rate quarters.....		2,962.53
Total.....	316,170.52	153,470.68

Figures in parentheses denote credit balance.

This account covers expenses incurred for account of divisions indicated, but which are not chargeable to operating accounts of the current fiscal year. These amounts are charged as soon as values are consumed.

TABLE No. 7.—*Custodial funds, receipts and disbursements, fiscal year ended June 30, 1949*

	Disbursing clerk, Washington, D. C.	Treasurer, Canal Zone ¹	Total	United States Treasury	Total
Accountable balance, July 1, 1948:					
Revenue due U. S. Treasury.....		\$10,671.14	\$10,671.14		\$10,671.14
Security deposits.....	\$42,136.91	2,547,959.89	2,590,126.80		2,590,126.80
Clubhouse funds.....		13,621.79	13,621.79	\$1,881,221.75	1,894,843.54
Money order funds.....		23,336.63	23,336.63	10,267,780.59	10,291,117.22
Total.....	42,136.91	2,595,619.45	2,637,756.36	12,149,002.34	14,786,758.70
Receipts:					
Revenue due U. S. Treasury.....	233.38	20,884,236.88	20,884,470.26	1,259.60	20,885,729.86
Security deposits.....	152,557.43	38,857,507.11	39,010,064.54		39,010,064.54
Clubhouse funds.....		4,798,657.77	4,798,657.77		4,798,657.77
Money order funds.....		7,464,680.60	7,464,680.60		7,464,680.60
Total.....	152,790.81	72,005,082.36	72,157,873.17	1,259.60	72,159,132.77
Total.....	194,927.72	74,600,701.81	74,795,629.53	12,150,261.94	86,945,891.47
Transfer to U. S. Treasury:					
Clubhouse funds.....		(4,812,279.56)	(4,812,279.56)	4,812,279.56	
Money order funds.....		(6,844,057.23)	(6,844,057.23)	6,844,057.23	
Total to be accounted for.....	194,927.72	62,944,365.02	63,139,292.74	23,806,598.73	86,945,891.47
Covered into U. S. Treasury:					
Revenue due U. S. Treasury.....	233.38	20,877,014.37	20,877,247.75	1,259.60	20,878,507.35
Transfers and refunds: Security deposits.....	177,703.29	39,440,068.12	39,617,771.41		39,617,771.41
Disbursements:					
Clubhouse funds.....				5,080,497.06	5,080,497.06
Money order funds.....		643,960.00	643,960.00	7,109,292.99	7,753,252.99
Total.....		643,960.00	643,960.00	12,189,790.05	12,833,750.05
Accountable balance, June 30, 1949:					
Revenue due U. S. Treasury.....		17,893.65	17,893.65		17,893.65
Security deposits.....	16,991.05	1,965,428.88	1,982,419.93		1,982,419.93
Clubhouse funds.....				1,613,004.25	1,613,004.25
Money order funds.....				10,002,544.83	10,002,544.83
Total.....	16,991.05	1,983,322.53	2,000,313.58	11,615,549.08	13,615,862.66
Total accounted for.....	194,927.72	62,944,365.02	63,139,292.74	23,806,598.73	86,945,891.47

Figures in parentheses denote deduction.

¹ Former functions paymaster, Canal Zone, and collector, Canal Zone, were consolidated under treasurer, Canal Zone, effective July 1948.

² Includes \$5,950,000 invested in United States Treasury Bonds; \$3,000,000 in United States Treasury Notes; and \$400,000 in United States Savings Bonds; a total of \$9,350,000.

³ Total per balance sheet, table No. 1, in the amount of \$13,841,321.48, includes \$225,458.82 of bills in process of collection.

Custodial funds cover cash transactions which are controlled by separate fiscal regulations from those which govern the expenditure of appropriations made by Congress for maintenance and operation of The Panama Canal.

Revenue due United States Treasury covers collections for deposit as miscellaneous receipts of the United States Government which form no part of the working cash of The Panama Canal, as those funds must by law immediately be covered into the United States Treasury and relinquished from control of The Panama Canal. These collections consist mainly of tolls, licenses, and court fees and fines.

Security deposits cover cash received by Canal fiscal officers from banks, individuals, and companies to guarantee payment of bills rendered by The Panama Canal and the Panama Railroad Company, and to guarantee fulfillment of contracts. Disbursements of these funds represent transfers to Revenue due United States Treasury on this table, collections repayable to appropriations on the preceding table, and the return of unexpended balances to depositors.

Special deposit funds cover certain activities conducted by the Canal Zone government separately from appropriations, principally postal money order funds, and transactions of Panama Canal club-houses maintained exclusively for employees.

TABLE NO. 8.—*Depreciable assets, buildings and structures (general), fiscal year 1949*

	Balance July 1, 1948	Additions and transfers	Retirements * and transfers	Balance June 30, 1949
Locks:				
Miraflores.....	\$19,231,312.35			\$19,231,312.35
Pedro Miguel.....	14,391,598.02			14,385,655.77
Toilet and locker facilities.....		\$164.40		
Building 6-X, demolished.....			\$6,106.65	
Gatun.....	30,770,447.93			30,770,447.93
Floating caisson.....	347,868.15			347,868.15
Towing locomotives.....	1,680,452.02			1,915,405.67
Construct 6 locomotives.....		234,953.65		
Dams: Madden.....	5,508,509.79			5,508,509.79
Spillways:				
Miraflores.....	938,564.43			938,564.43
Gatun.....	2,853,004.90			2,853,004.90
Aids to navigation:				
Channel aids.....	627,656.80			641,480.24
Construct 2 range towers.....		13,823.44		
Transit aids.....	24,191.04			24,191.04
Coastal aids.....	175,069.78			175,069.78
Lighthouse depot, Gatun.....	204,061.81			204,061.81
Wharves and piers:				
Balboa (Nos. 14 to 19).....	4,921,884.48			4,881,204.14
Dock for dredging division, Diabolo Heights.....		1,361.78		
Dredging division dock buildings transferred to dredging division plant.....			47,373.02	
Designs and plans for improving electrical facilities, Balboa docks.....		5,330.90		
Gamboa.....	295,430.46			295,430.46
Cristobal (Nos. 6, 13, 14 and 15).....	3,627,061.82			3,841,254.87
Mindi dock (transferred from third locks).....		214,193.05		

TABLE NO. 8.—*Depreciable assets, buildings and structures (general), fiscal year 1949—Continued*

	Balance July 1, 1948	Additions and transfers	Retirements and transfers	Balance June 30, 1949
Dry docks:				
Balboa	\$2,818,970.24			\$2,823,688.54
Renew crane tracks		\$4,718.30		
Cristobal	520,358.98			520,358.98
Coaling plants:				
Balboa	1,830,633.35			1,181,614.65
Restoration of electrical facilities, dock 6		9,017.84		
Restoration of electrical facilities, dock 7		6,802.93		
Restoration of electrical facilities, coaling plant machinery		1,891.97		
Coaling plant machinery and structures (demolished)			\$374,958.27	
Storage area, abandoned			290,573.17	
Building 904-D transferred to other canal general buildings			1,200.00	
Cristobal	3,324,072.29			3,276,620.75
Retirements: Unloader tower No. 3, (demolished)			47,451.54	
Dredging division plant	1,093,513.74			1,109,178.59
Barge repair building, transferred from dredging division dock		16,544.60		
Compressor building and spray pond transferred from dredging division dock		30,828.42		
Excavator No. 6 transferred to Sosa Hill plant			21,708.17	
Excavator No. 2 scrapped			10,000.00	
Ferry plants	1,168,601.38			1,211,512.26
Rebuild ferry slips		42,910.88		
Miraflores Bridge				1,454,970.86
Transferred from third locks		1,454,970.86		
General buildings and structures:				
Office buildings	2,139,263.89			2,139,263.89
Other buildings and structures	486,998.71			488,287.23
Seamen's checking-in shed		88.52		
Building 904-D, La Boca		1,200.00		
Health Department buildings and structures:				
Gorgas Hospital	2,486,134.20			3,974,249.23
Clinic and auditorium building		77,377.44		
Obstetrical building		1,306,188.88		
Steam plant		66,391.61		
Nurses' quarters (transfer from third locks)		38,157.70		
Colon Hospital	741,378.16			750,573.46
Alterations, general		9,195.30		
Margarita Hospital	403,243.80			407,837.85
Alterations to dental clinic		4,594.65		
Corozal Hospital	809,361.89			810,986.76
Nurses' quarters		1,624.87		
Palo Seco Leprosarium	190,551.16			216,112.31
Fire protection system		29,889.28		
Building No. 1 (demolished)			3,000.00	
Building No. 3 (demolished)			1,328.13	
Dispensaries	387,799.13			387,799.13
Quarantine stations	65,925.23			65,933.65
Designs and studies for postwar construction:				
Barracks for Americans		4.21		
Isolation ward		4.21		
Other buildings and structures	118,690.93			118,690.93
Civic buildings and structures:				
Schoolhouses	3,579,467.35			3,715,992.22
La Boca:				
Construct high school		60,134.83		
Construct vocational school		6,318.58		
Gamboa:				
Addition to elementary school		471.00		
Silver City:				
Construct high school		60,745.61		
Construct vocational school		8,854.85		

TABLE NO. 8.—*Depreciable assets, buildings and structures (general), fiscal year 1949—Continued*

	Balance July 1, 1948	Additions and transfers	Retirements and transfers	Balance June 30, 1949
Civic buildings and structures—Continued				
Recreational structures	\$479,775.80			\$468,811.20
Balboa:				
Addition to Balboa gymnasium		\$35.40		
Balboa gymnasium (old roof demolished)			\$11,000.00	
Police stations	289,007.98			284,387.98
Police barracks, Ancon (demolished)			4,620.00	
Prisons	80,729.71			85,069.74
Laundry drying room, Gamboa		4,340.03		
Fire stations	121,749.77			121,749.77
Courthouses	187,732.73			187,732.73
Post offices	238,468.34			238,468.34
Other buildings and structures	33,639.12			33,639.12
Total, depreciable assets, buildings and structures (general)	109,193,181.66	3,713,128.79	819,318.95	112,086,991.56

TABLE NO. 9.—*Depreciable assets, floating plant, fiscal year 1949*

	Balance July 1, 1948	Additions and transfers	Retirements and transfers	Balance June 30, 1949
Tugs and crane boats	\$4,205,649.93			\$5,640,455.97
Tugs acquired from Navy:				
Gorgona No. 2		\$339,570.00		
Limon		345,022.00		
Taboga		618,249.60		
Toro		54,148.00		
Conversion of tugs acquired from Navy:				
Gorgona No. 2		44,160.84		
Limon		7,791.49		
Taboga		23,649.06		
Toro		2,215.65		
Launches	981,397.81			961,555.16
New construction:				
Oriole		11,460.45		
Plover		39,478.54		
Darter		35,910.34		
Convert launch runner		8,863.04		
Retired from service:				
Mirlo			\$15,050.00	
Owl			17,336.36	
Pilotfish			28,762.88	
Sailfish			32,166.42	
Snook			10,932.34	
Tarpon			11,307.02	
Dredges	4,049,608.30			4,049,608.30
Dump scows	2,165,159.31			2,029,152.72
Retired from service:				
Barge No. 131			68,003.29	
Barge No. 134			68,003.30	
Machine barges	1,251,686.30			1,251,686.30
Lighters	467,969.29			465,569.29
Retired from service:				
Barge No. 36			2,400.00	
Launch repair barge	27,763.78			27,763.78
Anchor barges	50,019.43			50,019.43
Total, floating plant	13,199,254.15	1,530,548.41	253,961.61	14,475,810.95

TABLE NO. 10.—*Depreciable assets, business operations structures, fiscal year 1949*

	Balance July 1, 1948	Additions and transfers	Retirements and transfers	Balance June 30, 1949
Electric power system:				
Hydroelectric plants:				
Gatun.....	\$2,457,394.72			\$2,456,294.72
Installation of unit No. 6.....		(\$1,100.00)		
Madden Dam.....	1,728,152.54			1,728,152.54
Diesel electric plant, Miraflores.....	1,969,232.85			1,969,232.85
Substations.....	1,616,942.16			1,930,043.25
Balboa:				
Replace switchgear.....		313,101.09		
Transmission lines.....	1,560,695.81			1,560,695.81
Distribution system.....	2,370,611.73			2,439,435.13
Ancon.....		38,641.97		
Balboa.....		13,453.23		
Cristobal.....		16,728.20		
Total, Electric Power System.....	11,703,029.81	380,824.49		12,083,854.30
Electrical work.....	386,933.20			386,933.20
Water system:				
Zone System.....	1,864,059.23			1,908,677.69
Distribution lines:				
Ancon.....		3,877.45	\$7,600.00	
Balboa.....		12,846.65	11,000.00	
Diablo Heights.....		18,970.50	3,000.00	
Cocoli.....		1,070.91		
Paraiso.....		12.77		
Camp Coimer.....		14,335.54		
Margarita.....		2,131.87		
Cristobal.....		9,774.17		
Mount Hope.....		3,481.62	2,600.00	
Silver City.....		4,316.98	2,000.00	
Zone-Panama system.....	3,946,613.46			3,946,613.46
Zone-Colon system.....	1,520,061.54			1,520,061.54
Total, water system.....	7,330,734.23	70,818.46	26,200.00	7,375,352.69
Municipal engineering work.....	143,018.12			143,018.12
Mechanical Division:				
Balboa shops.....	2,743,234.62			2,947,399.48
Replace switchboard, building 29.....		151,044.94		
Extend pattern storage shed.....		53,119.92		
Cristobal shops.....	604,005.88			653,962.58
Transfers from Federal Works Agency:				
Access Road, Navy section base extension.....		15,765.09		
Access Road serving docks 13 and 14, Mount Hope.....		34,191.61		
Total, mechanical division.....	3,347,240.50	254,121.56		3,601,362.06
Oil-handling plants:				
Balboa.....	972,057.75			1,528,139.67
New construction:				
Foamite storage building.....		839.80		
Transfers from Canal defense property:				
Tank No. SG 1.....		42,320.00		
Tank No. SG 2.....		42,320.00		
Tank No. SG 3.....		42,320.00		
Oil pipe line, dock 6.....		215,313.44		
Fuel oil line, dock 17.....		28,420.00		
Air releases and air cushions.....		9,496.68		
Gasoline line, east bank.....		21,638.00		
Diesel pump.....		64,400.00		
Tank No. 5.....		24,720.00		
Tank No. 60.....		24,720.00		
Tank No. 61.....		24,720.00		
Navy pipe line.....		14,854.00		

NOTE.—Figures in parentheses denote reduction.

TABLE No. 10.—*Depreciable assets, business operations structures, fiscal year 1949—Continued*

	Balance July 1, 1948	Additions and transfers	Retirements and transfers	Balance June 30, 1949
Oil-handling plants:—Continued				
Cristobal	\$1, 295, 524. 69			\$1, 576, 070. 42
New Construction:				
6" kerosine line, Mount Hope		\$1, 551. 11		
Transfer from Canal defense property:				
Two Diesel pumps		25, 760. 00		
Fuel oil line, pier 7 to pier 6		22, 436. 52		
Fuel oil line to pier 6		73, 920. 00		
Air releases and air cushions		2, 414. 10		
Diesel lines, docks 9 and 10		19, 320. 00		
Tank No. PG 3, Gatun		29, 992. 00		
Tank No. PG 4, Gatun		29, 992. 00		
Tank No. 6, Mount Hope		24, 720. 00		
Tank No. 27, Mount Hope		24, 720. 00		
Tank No. 35, Mount Hope		24, 720. 00		
Total, oil-handling plants	2, 267, 582. 44	836, 627. 65		3, 104, 210. 09
General storehouses	1, 518, 429. 98			1, 516, 069. 04
Install track, scrap area section I, Balboa		7, 267. 06		
Retirements:				
Spur tracks Nos. 142 and 143, Summit			\$9, 628. 00	
Total, storehouses	1, 518, 429. 98	7, 267. 06	9, 628. 00	1, 516, 069. 04
Motor transportation division	407, 384. 21			408, 864. 68
New switchboard, Ancon garage		1, 480. 47		
Total, motor transportation division	407, 384. 21	1, 480. 47		408, 864. 68
Building division	132, 512. 14			151, 743. 17
Balboa:				
Paint shop building		5, 962. 12		
Dust collecting system, Ancon mill		9, 268. 91		
Cristobal:				
Transfer from Navy:				
Packing and crating shop		4, 000. 00		
Total, building division	132, 512. 14	19, 231. 03		151, 743. 17
United States-rate quarters	16, 279, 480. 27			20, 278, 000. 81
New construction:				
Ancon-Balboa District:				
1 type 113, Ancon		49. 76		
Convert 1 12-family house to 3-family, Diablo Heights		5, 859. 34		
4 type 112's, Diablo Heights		36, 951. 10		
2 type 218's, Diablo Heights		32, 834. 49		
1 type 321, Diablo Heights		19, 020. 90		
2 type 322's, Diablo Heights		30, 503. 68		
1 type 324, Diablo Heights		30, 132. 69		
1 type 326, Diablo Heights		45, 851. 05		
2 type 112's, Diablo Heights		69, 455. 82		
1 type 218-R1, Diablo Heights		27, 559. 92		
1 type 323, Diablo Heights		3, 267. 93		
1 type 324, Diablo Heights		3, 538. 35		
Cocoli district:				
Convert two 215 quarters to 2-family quarters		10, 799. 32		
Cristobal district:				
17 type 112's, Margarita		14. 64		
4 masonry quarters, Margarita		74, 519. 79		
3 type 112's, Margarita		102, 251. 68		
1 type 102, Margarita		21, 428. 68		
Alterations and improvements:				
Ancon-Balboa district		41, 220. 77		
Pedro Miguel district		64. 25		
Cocoli district		3, 280. 00		
Gamboa district		3, 936. 31		
Gatun district		1, 774. 13		
Cristobal district		2, 049. 64		
Transfers to Canal defense property:				
Ancon-Balboa district			68, 222. 23	
Gatun district			61, 231. 11	
Transfers from third set locks:				
Ancon-Balboa district		1, 130, 223. 78		
Cocoli district		1, 799, 882. 98		
Gamboa district		816, 555. 21		
Cristobal district		1, 045, 370. 15		

TABLE NO. 10.—*Depreciable assets, business operations structures, fiscal year 1949—Continued*

	Balance July 1, 1948	Additions and transfers	Retirements and transfers	Balance June 30, 1949
United States-rate quarters—Continued				
Furniture transferred to business equipment:				
Ancon-Balboa district.....			\$726,424.81	
Pedro Miguel district.....			54,857.17	
Gamboa district.....			85,197.45	
Gatun district.....			126,542.60	
Cristobal district.....			219,992.88	
Improvements transferred to local-rate quarters:				
Gamboa district.....			158.67	
Preliminary plans and studies.....		\$ 8,077.91		
Retirements:				
Ancon-Balboa district.....			11,826.57	
Pedro Miguel district.....			11,689.05	
Cristobal district.....			1,776.74	
Garages:				
New construction:				
11-stall, Balboa.....		2,203.83		
6-stall, Paraiso.....		2,341.79		
Retirements:				
Ancon-Balboa district.....			4,580.07	
Total, United States-rate quarters.....	\$16,279,480.27	5,371,019.89	1,372,499.35	\$20,278,000.81
Local-rate quarters.....	2,412,591.26			3,241,285.34
New construction:				
Pedro Miguel district:				
4 type 135's Paraiso.....		6,625.89		
2 type 127's, 1 type 128 and 1 type 129, Paraiso.....		6,127.36		
Cocoli district:				
Convert 2 type S-121 to 6-family quarters.....		8,119.15		
Cristobal district:				
7 masonry quarters, Camp Coiner.....		305.75		
3 type S-127's, Camp Coiner.....		11,169.52		
6 type 131's and 4 type 132's, Camp Coiner.....		73,029.38		
4 type 130-R1's and 1 type 131-R1, Camp Coiner.....		44,197.96		
8 miscellaneous type, Camp Coiner.....		31,761.60		
3 type 139's, 4 type 140's and 5 type 141's, Camp Coiner.....		115,569.91		
Remodel 18 cantonments, Silver City.....		47,106.26		
Alterations and improvements:				
Gamboa district.....		158.67		
Transfers from Canal defense property:				
Ancon-Balboa district.....		85,481.00		
Transfers from third set locks:				
Ancon-Balboa district.....		85,173.00		
Cocoli district.....		19,739.00		
Gamboa district.....		298,867.55		
Preliminary plans and studies.....		1,362.08		
Retirements:				
Ancon-Balboa district.....			100.00	
Gamboa district.....			6,000.00	
Total, local-rate quarters.....	2,412,591.26	834,794.08	6,100.00	3,241,285.34
Gasoline service stations.....	48,480.69			48,480.69
Clubhouse business structures.....	726,717.22			726,717.22
Total, depreciable assets, business operations structures.....	46,704,134.07	7,776,184.69	1,414,427.35	53,065,891.41

TABLE NO. 11—*Depreciable assets, business operations equipment, fiscal year 1949*

	Balance July 1, 1948	Additions and transfers	Retirements and transfers	Balance June 30, 1949
Electric power system.....	\$173,393.41	\$116,178.77	\$45,820.40	\$543,751.81
Electrical work.....	6,931.55	.....	.....	6,931.55
Municipal work.....	206,547.92	21,105.93	25,356.91	202,286.94
Sosa Hill plant.....	60,187.14	21,708.17	.....	81,895.31
Mechanical shops.....	2,814,669.65	151,806.76	50,706.42	2,915,769.99
General storehouses.....	149,596.28	13,197.45	20,755.09	142,038.64
Motor transportation.....	1,314,510.33	246,202.45	94,835.44	1,465,877.34
Building division.....	189,843.61	12,982.31	16,465.91	186,359.98
Panama Canal press.....	138,576.63	3,734.47	.....	142,311.10
Furniture (transferred from business operations structures).....	.....	1,310,263.10	.....	1,310,263.10
Total, business equipment.....	5,354,256.55	1,897,179.41	253,950.20	6,997,485.76

TABLE NO. 12.—*Accrued depreciation, fiscal year 1949*

CANAL DEPRECIATION

	Balance July 1, 1948	Accruals	Retirements and transfers	Balance June 30, 1949
Locks.....	\$16,008,858.62	\$501,920.39	\$1,221.36	\$16,509,557.65
Madden Dam.....	715,165.20	55,085.09	.....	770,250.29
Spillways.....	703,577.16	21,320.52	.....	724,897.68
Aids to navigation.....	504,811.42	17,463.88	.....	522,275.30
Wharves and piers.....	3,639,142.24	186,867.47	.....	3,826,009.71
Dry docks.....	1,157,196.28	42,657.93	.....	1,199,854.21
Coaling plants.....	3,831,162.90	104,955.15	651,609.48	3,284,508.57
Dredging division plant.....	693,201.88	90,671.45	10,000.00	773,873.33
Ferry plants.....	825,591.69	38,766.13	.....	864,357.82
Office buildings.....	645,318.63	25,916.27	.....	671,234.90
Other general buildings and structures.....	267,359.46	10,495.47	(1,200.00)	279,054.93
Gorgas Hospital.....	560,021.77	31,847.99	.....	591,869.76
Colon Hospital.....	150,371.95	15,224.86	.....	165,596.81
Margarita Hospital.....	30,089.73	10,029.91	.....	40,119.64
Corozal Hospital.....	170,039.28	13,591.61	.....	183,630.89
Palo Seco Leprosarium.....	67,770.02	4,448.94	4,328.13	67,890.83
Dispensaries.....	93,504.04	7,399.11	.....	100,903.15
Quarantine stations.....	65,392.70	.....	.....	65,392.70
Other health department structures.....	42,349.12	2,829.83	.....	45,178.95
Schoolhouses.....	462,212.92	46,823.21	.....	509,036.13
Recreational structures.....	120,424.39	11,927.98	2,475.00	129,877.37
Police stations.....	69,635.46	6,262.05	4,620.00	71,277.51
Prisons.....	18,486.23	2,466.05	.....	20,952.28
Fire stations.....	52,161.59	2,541.34	.....	54,702.93
Courthouses.....	118,699.85	3,754.65	.....	122,454.50
Post offices.....	26,827.70	2,967.31	.....	29,795.01
Other civic buildings and structures.....	21,822.93	1,519.91	.....	23,342.84
Local-rate quarters.....	268,125.28	102,896.60	1,600.00	369,421.88
Contingent reserve.....	366,878.08	143,835.71	175,983.79	434,730.00
Total, Canal depreciation.....	31,696,198.52	² 1,506,486.81	750,637.76	32,452,047.57

NOTE.—Figures in parentheses denote increase.

¹ Residual values of following items:

Coaling plants:	
Unloader tower No. 3.....	\$4,745.04
Machinery and structures.....	28,771.29
Storage area.....	29,057.17
Locks: Building 6-X, Pedro Miguel.....	4,885.29
Recreational structure: Roof, Balboa gymnasium.....	8,525.00
Total.....	75,983.79

² Includes \$6,486.81 depreciation on nurses' quarters, Gorgas Hospital, transferred from third locks.

TABLE No. 12.—*Accrued depreciation, fiscal year 1949—Continued*

PLANT DEPRECIATION

	Balance July 1, 1948	Accruals	Retirements and transfers	Balance June 30, 1949
Floating plant:				
Tugs and craneboats.....	\$1, 175, 347. 03	\$223, 329. 84	-----	\$1, 398, 676. 87
Launches.....	556, 639. 46	65, 258. 78	\$92, 485. 72	529, 412. 52
Dredges.....	2, 178, 960. 00	157, 692. 00	-----	2, 336, 652. 00
Dump scows.....	1, 072, 377. 60	94, 224. 00	136, 006. 59	1, 030, 595. 01
Machine barges.....	689, 655. 26	52, 344. 00	-----	741, 999. 26
Lighters.....	249, 843. 24	17, 664. 00	2, 400. 00	265, 107. 24
Launch repair barges.....	7, 656. 00	1, 392. 00	-----	9, 048. 00
Anchor barges.....	7, 410. 00	2, 496. 00	-----	9, 906. 00
Total, floating plant.....	5, 937, 888. 59	614, 400. 62	230, 892. 31	6, 321, 396. 90
Business operations structures:				
Electric power system.....	3, 534, 739. 55	206, 056. 77	-----	3, 740, 796. 32
Electrical work.....	99, 566. 04	9, 933. 36	-----	109, 499. 40
Water system.....	2, 007, 558. 67	170, 232. 00	26, 200. 00	2, 151, 590. 67
Municipal work.....	39, 247. 43	3, 282. 00	-----	42, 529. 43
Mechanical shops.....	1, 454, 721. 05	65, 604. 00	-----	1, 520, 325. 05
Oil-handling plants.....	1, 360, 106. 11	76, 537. 16	-----	1, 436, 643. 27
General storehouses.....	767, 451. 30	41, 004. 99	9, 628. 00	798, 828. 29
Motor transportation division.....	111, 326. 21	12, 114. 00	-----	123, 440. 21
Building division.....	26, 607. 99	1, 749. 75	-----	28, 357. 74
United States-rate quarters.....	4, 432, 519. 02	413, 254. 55	183, 308. 36	4, 662, 465. 21
Local-rate quarters.....	492, 036. 57	-----	4, 500. 00	487, 536. 57
Clubhouse business structures.....	322, 994. 10	13, 584. 36	-----	336, 578. 46
Gasoline service stations.....	27, 186. 19	1, 255. 96	-----	28, 442. 15
Total, business operations structures.....	14, 676, 060. 23	1, 014, 608. 90	223, 636. 36	15, 467, 032. 77
Business operations equipment:				
Electric power system.....	276, 153. 58	26, 488. 95	45, 820. 40	256, 822. 13
Electrical work.....	5, 939. 57	264. 00	-----	6, 203. 57
Municipal work.....	182, 895. 57	9, 399. 42	24, 814. 91	167, 480. 08
Sosa Hill plant.....	60, 187. 14	3, 620. 00	-----	63, 807. 14
Mechanical shops.....	1, 752, 509. 81	93, 276. 64	50, 706. 42	1, 795, 180. 03
General storehouses.....	113, 915. 22	11, 660. 18	15, 771. 00	109, 804. 40
Motor transportation division.....	921, 130. 64	130, 500. 55	94, 835. 44	956, 795. 75
Building division.....	132, 071. 47	8, 092. 74	16, 465. 94	123, 698. 27
Panama Canal press.....	97, 215. 66	5, 628. 60	-----	102, 844. 26
Furniture.....	-----	¹ 502, 245. 86	² (534, 236. 42)	1, 036, 482. 28
Total, business operations equipment.....	3, 542, 118. 66	791, 176. 94	(285, 822. 31)	4, 619, 117. 91
Total, plant depreciation.....	24, 156, 067. 48	2, 420, 186. 46	168, 706. 36	26, 407, 547. 58

NOTE.—Figures in parentheses denote increase.

¹ The depreciation accrual for the fiscal year 1949 is made up of the following:

Shortage in depreciation due to use of 50-year life was adjusted by a charge of \$430,245.86	
to business operations surplus.....	\$430, 245. 86
Accruals charged during the year (\$6,000×12 months).....	72, 000. 00
	<u>502, 245. 86</u>

² Depreciation on furniture was adjusted as follows:

Depreciation on furniture transferred from business operations structures to business operations equipment.....	256, 073. 04
Transfer of depreciation on third locks furniture from business operations structures to business operations equipment.....	33, 811. 62
Shortage in depreciation on furniture transferred from third locks (\$125,046.01) and Canal defense property (\$83,305.75).....	208, 351. 76
Annual accrual for period Jan. 1, 1948, to June 30, 1948, transferred from business operations structures to business operations equipment.....	36, 000. 00
	<u>534, 236. 42</u>

TABLE NO. 12.—*Accrued depreciation, fiscal year 1949—Continued*

SUMMARY

	Balance July 1, 1948	Accruals	Retirements and transfers	Balance June 30, 1949
Canal depreciation.....	\$31,696,198.52	\$1,506,486.81	\$750,637.76	\$32,452,047.57
Plant depreciation.....	24,156,067.48	2,420,186.46	168,706.36	26,407,547.58
Total depreciation.....	55,852,266.00	3,926,673.27	919,344.12	58,859,595.15

The accrued balance as of June 30, 1949, of \$58,859,595.15 applies to depreciable capital assets shown on Tables Nos. 8, 9, 10, and 11, amounting to \$186,626,179.62.

TABLE NO. 13.—*Nondepreciable assets, fiscal year 1949*

	Balance July 1, 1948	Additions and transfers	Retirements and transfers	Balance June 30, 1949
LAND—EXCAVATION, FILL, AND IMPROVEMENTS				
Channels, harbors, and basins:				
Balboa to Pedro Miguel.....	\$24,309,928.86			\$24,309,928.86
Pedro Miguel to Gatun.....	113,466,691.77			113,466,691.77
Gatun to Cristobal.....	12,829,445.51			12,829,445.51
Breakwaters:				
Naos Island.....	1,075,874.10			1,075,874.10
Colon, east.....	3,994,727.10			3,994,727.10
Colon, west.....	4,528,829.57			4,528,829.57
Canal locks, excavation, fill, etc.:				
Miraflores.....	5,527,675.15			5,527,675.15
Pedro Miguel.....	2,505,335.52			2,505,335.52
Gatun.....	7,243,221.62			7,243,221.62
Dams:				
Miraflores.....	1,228,561.63			1,228,561.63
Pedro Miguel.....	457,302.32			457,302.32
Madden.....	4,568,060.82			4,568,060.82
Gatun.....	10,475,943.56			10,475,943.56
Mindi Levee, Gatun.....	148,974.22			148,974.22
Spillways:				
Miraflores.....	460,120.51			460,120.51
Gatun.....	1,470,533.12			1,470,533.12
Dry docks, excavation, fill, etc.:				
Balboa.....	826,342.82			826,342.82
Cristobal.....	152,078.72			152,078.72
Permanent townsites:	2,594,359.14			2,738,939.16
Ancon.....		\$52,626.86		
La Boca.....		56.83		
Diablo Heights.....		20,631.12		
Corozal.....		464.24		
Paraiso.....		624.73		
Camp Coiner.....		63,103.59		
Margarita.....		6,833.02		
Silver City.....		239.63		
Roads, streets, and sidewalks:	6,543,574.05			8,321,305.57
Ancon.....		18,985.69		
Balboa.....		97,115.84		
La Boca.....		672.32		
Diablo Heights.....		1,553.20		
Corozal.....		465.36		
Coccol.....		140.18		
Paraiso.....		119.51		
Margarita.....		6,271.20		
Cristobal.....		62,393.88		
Camp Coiner.....		22,618.14		
Roads constructed with funds advanced by Federal Works Agency.....		11,567,396.20		
Sewer system:	1,057,335.75			1,114,789.69
Pacific side—general sewage disposal studies.....		261.61		
Current measurements.....		1,129.32		
Designs for Balboa sewers.....		6,740.24		
Ancon.....		20,608.48		
La Boca.....		783.28		
Diablo Heights.....		1,653.82		
Paraiso.....		417.52		

TABLE NO. 13.—*Nondepreciable assets, fiscal year 1949—Continued*

	Balance July 1, 1948	Additions and transfers	Retirements and transfers	Balance June 30, 1949
LAND—EXCAVATION, FILL, AND IMPROVEMENTS—Continued				
Sewer system—Continued				
Camp Colner		\$22, 127. 40		
Margarita		2, 305. 08		
Silver City		472. 08		
Atlantic side—general sewage disposal studies		261. 68		
Sewage disposal consultants		693. 43		
Street lighting system:	\$309, 035. 78			\$352, 045. 14
Ancon		815. 51		
Balboa		462. 43		
La Boca		780. 56		
Diablo Heights		12, 183. 66		
Gamboa		471. 86		
Paraiso		604. 89		
Margarita		4, 352. 00		
Camp Colner		23, 338. 45		
Subtotal	205, 152, 796. 81	2, 022, 774. 84		207, 796, 726. 48
TITLES AND TREATY RIGHTS				
Purchase price, new Panama Canal Company	² 31, 717, 335. 97			31, 717, 335. 97
Treaty payment to Republic of Panama, 1904	10, 000, 000. 00			10, 000, 000. 00
Annual treaty payments to Republic of Panama, 1913-20	2, 000, 000. 00			2, 000, 000. 00
Relocation of Panama Railroad	9, 800, 626. 46			9, 800, 626. 46
Reequipment of Panama Railroad	3, 247, 332. 11			3, 247, 332. 11
Depopulation, Canal Zone	2, 827, 288. 11			2, 827, 288. 11
Subtotal	59, 592, 582. 65			59, 592, 582. 65
Interest during construction	128, 991, 063. 00			128, 991, 063. 00
Grand total, nondepreciable property	394, 357, 597. 29	2, 022, 774. 84		396, 380, 372. 13

¹ Detail of roads constructed with funds advanced by Federal Works Agency:

Randolph diversion road	\$269, 547. 55
Diablo Heights crossing to Pacific general depot, Corozal	105, 142. 45
Tivoli crossing to quartermaster office, Balboa	135, 300. 91
Relocate Gaillard Highway, junction of Madden Dam Road and Gaillard Highway to Panama Railroad bridge, Gamboa	641, 372. 29
Coral Road, Coco Solo	11, 821. 48
Widen Gaillard Highway, Tivoli crossing to Diablo Heights crossing	67, 602. 60
North end Fort Clayton Road to north side Caimitillo crossing	138, 942. 34
Replace road, north side Caimitillo crossing to Paraiso turn-off	140, 781. 09
Paraiso turn-off to intersection of New Gamboa Road	56, 885. 49
Total	1, 567, 396. 20

² Original purchase price of \$40,000,000, less Panama Railroad Company capital stock and sales and transfers of property acquired.

Channels, harbors, basins, breakwaters, and municipal assets are maintained at original values from current operating expenses. Other nondepreciable property includes excavation and earth fills at locks, dams, and dry docks, and earth saddles at Madden Dam; also certain projects which were incomplete at the close of the fiscal year.

TABLE NO. 14.—*Accounts payable*

	June 30, 1949	June 30, 1948
United States and local suppliers	\$415, 479. 28	\$455, 680. 08
Transportation and procurement	1, 766, 896. 88	1, 567, 330. 88
Salaries and wages of employees	2, 201, 884. 69	3, 012, 920. 75
Recruiting and repatriating of employees	204, 907. 23	357, 160. 74
Total	4, 589, 168. 08	5, 293, 092. 45

The foregoing table covers all current obligations of The Panama Canal except deposits to guarantee payment of bills, and special deposit funds, which are covered by table No. 7, custodial funds; and unliquidated obligations, which are covered by table No. 16.

TABLE NO. 15.—*Business operations: Expenses, revenues, and profit or loss, fiscal year 1949*

	Expenses	Revenues	Profit or loss
Electric power system.....	\$1,456,618.04	\$1,670,976.62	\$214,358.59
Electrical work.....	1,799,459.44	1,816,301.64	16,842.20
Water system.....	1,051,236.52	1,184,310.96	133,074.44
Municipal work.....	2,008,685.00	2,078,800.28	70,115.28
Sosa Hill rock crusher and batching plant.....	360,358.83	358,779.67	(1,579.16)
Mechanical division.....	5,588,608.82	5,645,347.86	56,739.04
Wharves and piers.....	24,648.00	96,000.00	71,352.00
Oil-handling plants.....	3,025,475.57	3,159,750.56	134,274.99
General storehouses.....	9,545,261.26	9,835,253.08	289,991.82
Motor transportation division.....	1,816,204.58	1,862,544.08	46,339.50
Building division.....	3,610,552.10	3,632,350.12	21,798.02
Panama Canal press.....	614,633.56	630,144.51	15,510.95
United States-rate quarters.....	1,725,523.80	1,729,616.58	4,092.78
Local-rate quarters.....	521,926.96	520,995.93	(931.03)
Gasoline service stations.....	777,355.79	812,234.41	34,878.62
Sand and gravel operations.....	36,206.18	40,960.19	4,754.01
Rental, Hotel Tivoli.....		7,507.00	7,507.00
Omitted overtime claims.....	112,160.01		(112,160.01)
Total.....	34,074,914.46	35,081,873.50	1,006,959.04
Add: Additional amounts for prior fiscal years:			
Panama Canal press: Net inventory overage.....			11,528.20
General storehouses: Value of lumber received without billing from U. S. Army.....			292,432.80
Total additions.....			303,961.00
Deduct: Adjustments for prior fiscal years:			
United States-rate quarters:			
Under depreciation on furniture.....			430,245.86
Under depreciated value of refrigerators.....			35,303.74
Total deductions.....			465,549.60
Net deductions.....			161,588.60
Total business profits to be covered into Treasury.....			845,370.44

NOTE.—Figures in parentheses denote loss.

The profit of \$1,006,959.04 for the fiscal year 1949 compares with profits in the fiscal year 1948 of \$1,559,478.71. The amount of \$845,370.44 to be covered into the Treasury as miscellaneous receipts, United States revenues, is after deducting \$161,588.60 for prior fiscal year adjustments. The amount of \$430,245.86 shown above as under depreciation on furniture will be applied to reduce the appropriation requirements for the fiscal year 1951.

Business operations of The Panama Canal are conducted separately from operating activities pertaining directly to the transiting of vessels, and government of the Canal Zone. The annual appropriation acts for The Panama Canal authorize the use of appropriated funds for the conduct of auxiliary business activities, provided that funds so advanced are recovered through earnings, and with the further provision that any net profit derived from such business activities be covered annually into the United States Treasury.

TABLE NO. 16.—*Unliquidated obligations*

	June 30, 1949	June 30, 1948
Maintenance and operation:		
Director of finance and budget officer.....	\$492. 53	-----
Pacific locks.....	1, 096, 706. 69	\$323, 447. 57
Atlantic locks.....	190, 028. 04	188, 054. 98
Office engineer.....	13, 478. 23	-----
Meteorology and hydrography.....	116. 79	410. 00
Port captain, Balboa.....	-----	16, 869. 50
Port captain, Cristobal.....	13, 462. 99	16, 050. 20
Aids to navigation subdivision.....	5, 738. 91	26, 190. 91
Dredging division.....	2, 571. 25	14, 199. 67
Quartermasters' operations.....	16, 402. 21	23, 529. 49
Personnel supervision and management.....	5, 463. 59	3, 678. 93
Pay roll bureau.....	3, 000. 00	1, 000. 00
General correspondence and records.....	12, 962. 50	3, 400. 00
Department of finance.....	19, 889. 50	29, 629. 17
Offices in the United States.....	87. 75	1, 625. 40
General accounts, suspense.....	307. 94	-----
Damages to vessels.....	74, 640. 00	-----
Electric power system.....	60, 371. 27	-----
Electrical work.....	47, 891. 74	1, 000. 00
Water system.....	50. 02	-----
Municipal work.....	20, 287. 13	34, 018. 00
Mechanical division.....	157, 548. 38	6, 000. 00
Oil-handling plants.....	25, 471. 98	-----
General storehouses.....	76, 204. 21	-----
Motor transportation division.....	777. 95	-----
Building division.....	1, 068, 621. 56	-----
Panama Canal press.....	10, 342. 50	-----
United States-rate quarters.....	6, 235. 00	-----
Subsistence section.....	2, 627. 90	-----
Gasoline service stations.....	9, 889. 89	-----
Total, maintenance and operation.....	2, 941, 668. 45	689, 103. 82
Sanitation:		
Chief health office.....	950. 00	-----
Gorgas Hospital.....	179, 662. 52	200, 864. 95
Colon Hospital.....	35, 556. 72	3, 073. 63
Corozal Hospital.....	15, 552. 80	25, 990. 79
Palo Seco Leprosarium.....	27, 654. 30	26, 780. 51
Venereal disease clinics.....	-----	577. 32
Dental clinics.....	1, 400. 00	-----
Dispensaries.....	10, 010. 98	3, 704. 62
Cemeteries.....	3, 400. 00	4, 730. 00
Quarantine and immigration.....	161. 66	426. 25
Sanitation.....	11, 281. 33	7, 832. 46
Total, sanitation.....	285, 630. 31	273, 980. 53
Civil government:		
Schools.....	-----	\$4. 29
License Bureau.....	786. 00	-----
Library.....	3, 117. 59	1, 355. 00
Physical education and recreation.....	3, 004. 14	1, 460. 00
Police and prisons.....	2, 500. 00	8, 925. 76
Civil intelligence.....	1, 500. 00	1, 500. 00
Fire Section.....	26, 335. 67	230. 98
Magistrates' courts.....	-----	699. 31
District court.....	-----	688. 00
Total, civil government.....	37, 243. 40	14, 949. 34
Postal service.....	7, 000. 00	260. 00
Construction, additional facilities.....	81, 762. 75	75, 949. 00
Total.....	3, 353, 304. 91	1, 054, 242. 69

The above table covers unliquidated obligations for materials and equipment or services to be performed, based on authorized requisitions or work requests issued.

TABLE NO. 17.—*Deferred credits*

	June 30, 1949	June 30, 1948
Nautical books and charts.....	\$8,919.29	\$5,108.63
Public buildings and grounds.....	14,748.45	19,579.60
Air terminal.....	2,713.80	1,315.45
Treasurer.....	1,151.50	
General accounts, suspense.....	697.60	216,605.74
Gorgas Hospital.....		21,882.00
Special engineering division.....		(84,643.58)
Electric power system.....		37,146.44
Electrical work.....		34,208.51
Municipal work.....		48,416.03
Sosa Hill plant.....		16,238.39
Mechanical division.....		342,941.45
Oil-handling plants.....		68,980.44
General storehouses.....		87,546.79
General storehouses, sundries suspense.....	114.82	284,398.05
Motor transportation division.....		1,460.00
Building division.....		47,482.55
Panama Canal press.....		17,083.53
United States-rate quarters.....	5,128.92	30,346.77
Local-rate quarters.....	42,720.07	29,161.15
Subsistence section.....		2,000.00
Gasoline service stations.....		501.66
Contingencies, maintenance and operation.....	54,799.07	54,568.37
Contingencies, sanitation.....	628.84	621.50
Contingencies, civil government.....	281.89	281.89
Total.....	131,904.25	1,283,231.36

NOTE.—Figures in parentheses denote debit balance.

This account covers deferred credits to income: and expenses accrued or estimated which have been charged to operating accounts, but for which it was impracticable to institute corresponding payments at the close of the accounting period. These amounts are cleared as soon as corresponding charges are passed for payment or contingent expenses arise.

TABLE NO. 18.—*Obligated balances—Appropriated funds for repairs: Floating plant and business equipment, fiscal year 1949*

	Balance July 1, 1948	Accruals and adjustments	Charges	Balance June 30, 1949
Tugs and crane boats.....	\$210,759.59	\$118,498.80	\$93,027.70	\$236,230.69
Dredges.....	88,917.34	168,000.00	45,545.13	211,372.21
Dump scows.....	263,007.29	118,012.50	73,927.24	307,092.55
Machine barges.....	16,878.16	16,200.00	20,750.09	12,328.07
Total, floating plant.....	579,562.38	420,711.30	233,250.16	767,023.52
Electrical work, equipment.....	(5,210.45)	100,703.08	87,367.23	8,125.40
Total, business equipment.....	(5,210.45)	100,703.08	87,367.23	8,125.40
Total, reserve for repairs.....	574,351.93	521,414.38	320,617.39	775,148.92
Less: Fund balances, applicable to the retired tugs U. S. S. <i>Gorgona No. 1</i> and U. S. S. <i>Tavernilla</i> , which were transferred to replace- ment funds in fiscal year 1948.....	135,073.28			135,073.28
Balance, appropriated funds for repairs.....	439,278.65			640,075.64

NOTE.—Figures in parentheses denote debit balance.

TABLE NO. 19.—*Obligated balances—Appropriated funds for replacement: Floating and business operations plant, fiscal year 1949*

	Balance July 1, 1948	Accruals	Expendi- tures	Balance June 30, 1949
Marine division:				
Tugs	\$82,184.40	\$132,621.84		\$136,989.20
<i>Gorgona No. 2</i>			\$44,160.84	
<i>Limon</i>			7,791.49	
<i>Taboga</i>			23,649.06	
<i>Toro</i>			2,215.65	
Launches	127,716.41	49,241.89		81,245.93
<i>Oriole</i>			11,460.45	
<i>Punner</i>			8,863.04	
<i>Darter</i>			35,910.34	
<i>Plover</i>			39,478.54	
Machine barges	13,087.43			13,087.43
Launch repair barges	7,656.00	1,392.00		9,048.00
Total	230,644.24	183,255.73	173,529.41	240,370.56
Dredging division:				
Tugs and crane boats		90,708.00		90,708.00
Launches	147,964.68	16,016.89		163,981.57
Dredges		157,692.00		157,692.00
Dump scows		94,224.00		94,224.00
Machine barges		52,344.00		52,344.00
Lighters		17,664.00		17,664.00
Anchor barges	7,410.00	2,496.00		9,906.00
Total	155,374.68	431,144.89		586,519.57
Total, transit divisions	386,018.92	614,400.62	173,529.41	826,890.13
Electric power system:				
Hydroelectric plant, Gatun	152,381.95	54,123.45		203,505.40
Hydroelectric plant, Madden Dam	211,149.37	31,260.00		242,409.37
Diesel electric plant, Miraflores	379,610.50	64,044.00		443,654.50
Substations	391,901.75	36,109.32		414,909.98
Replace switchgear and transformers			313,101.09	
Transmission system	103,438.27	23,520.00		126,958.27
Electric ranges	227,785.97	26,488.95	113,586.40	140,688.52
Total	1,466,267.81	232,545.72	426,687.49	1,272,126.04
Electrical work:				
Fixed property		9,933.36		9,933.36
Equipment	7,606.15	264.00		7,870.15
Total	7,606.15	10,197.36		17,803.51
Water system:				
Pump station buildings	16,288.53	7,332.00		23,620.53
Pump station machinery	75,582.71	26,100.00		101,682.71
Filter plant buildings		26,640.00		26,640.00
Filter plant machinery	67,557.12	14,472.00		78,547.50
Replace 6 valves, Mount Hope filter plant			3,481.62	
Reservoirs and tanks		11,676.00		11,676.00
Pipe lines:				
Mains	52,418.16	37,836.00		90,254.16
Distribution	56,884.76	46,176.00		57,711.21
8-inch line, Balboa Heights			2,000.74	
8-inch line, Barney St., Balboa			9,983.83	
4-inch line, La Boea			862.08	
6-inch line, section I to Diablo Heights			17,340.84	
6-inch line, Cuipo place, Coeli			1,070.91	
6-inch line, Melendez Ave., Colon			3,283.05	
6-inch line, New Cristobal			2,796.73	
6-inch line, Coral Road, Cristobal			3,694.39	
6-inch line, Silver City			4,316.98	
Total	268,731.28	170,232.00	48,831.17	390,132.11
Municipal work:				
Fixed property	35,802.10	3,282.00		39,084.10
Equipment	96,163.47	9,951.42	15,569.84	90,545.05
Total	131,965.57	13,233.42	15,569.84	129,629.15
Sosa Hill plant:				
Equipment		3,620.00		3,620.00

TABLE NO. 19.—*Obligated balances—Appropriated funds for replacement: Floating and business operations plant, fiscal year 1949—Continued*

	Balance July 1, 1948	Accruals	Expendi- tures	Balance June 30, 1949
Mechanical division:				
Fixed property:				
Balboa shops		\$47, 172.00		\$47, 172.00
Balboa railroad shops		6, 108.00		6, 108.00
Cristobal shops		12, 324.00		12, 324.00
Equipment:				
Balboa	\$178, 737.37	62, 481.36		96, 735.42
Install Navy equipment			\$90, 485.09	
New equipment			54, 001.22	
Cristobal	266, 576.48	30, 792.28		290, 048.31
Install Navy equipment			7, 320.45	
Total	445, 313.85	158, 880.64	151, 806.76	452, 387.73
Oil-handling plants:				
Balboa:				
Pumping plant	23, 899.60	5, 891.84		28, 951.64
Foamite storage shed			839.80	
Storage tanks	75, 233.01	8, 881.44		84, 114.45
Pipe lines	115, 960.13	17, 037.48		132, 997.61
Dock No. 4	29, 700.00	3, 300.00		33, 000.00
Cristobal:				
Pumping plant	22, 916.16	6, 009.72		28, 925.88
Storage tanks	49, 131.99	10, 624.68		59, 756.67
Pipe lines	275, 457.81	24, 792.00	1, 551.11	298, 698.70
Total	592, 298.70	76, 537.16	2, 390.91	666, 444.95
General storehouses:				
Fixed property		41, 004.99		41, 004.99
Equipment	49, 196.46	11, 108.18	13, 197.45	47, 107.19
Total	49, 196.46	52, 113.17	13, 197.45	88, 112.18
Motor transportation division:				
Transportation:				
Fixed property	37, 485.80	6, 810.00		44, 295.80
Equipment (motor vehicles)	178, 501.52	129, 131.55	246, 202.45	61, 430.62
Repair shops:				
Fixed property	52, 344.40	5, 304.00		57, 648.40
Equipment	24, 028.77	1, 369.00		25, 397.77
Total	292, 360.49	142, 614.55	246, 202.45	188, 772.59
Building division:				
Fixed property	20, 159.06	1, 749.75	6, 648.85	15, 259.96
Equipment	30, 816.20	8, 092.74	12, 982.31	25, 926.63
Total	50, 975.26	9, 842.49	19, 631.16	41, 186.59
Panama Canal press:				
Equipment	44, 990.86	5, 628.60		50, 619.46
United States-rate quarters:				
Fixed property	52, 113.66	413, 254.55		69, 688.96
Alterations and improvements			32, 325.10	
Preliminary plans and studies			8, 077.91	
New construction			335, 276.24	
Equipment:				
Furniture	36, 000.00	1 502, 245.86		538, 245.86
Total	88, 113.66	915, 500.41	395, 679.25	607, 934.82
Local-rate quarters:				
Fixed property	1, 051.00			
New construction			1, 051.00	
Total	1, 051.00		1, 051.00	
Gasoline service stations:				
Fixed property	27, 336.19	1, 255.96		28, 592.15
Clubhouse business structures:				
Fixed property		13, 584.36		13, 581.36
Total, business divisions	3, 466, 207.28	1, 805, 785.84	1, 321, 047.48	3, 950, 945.64
Total	3, 852, 226.20	2, 420, 186.46	1, 494, 576.89	4, 777, 835.77

¹ Includes shortage in depreciation on furniture as of June 30, 1949 (\$430,245.86), which was charged to business division surplus. This amount, however, will contribute to the estimated excess over \$3,000,000 of replacement funds as of June 30, 1950, to be released to reduce 1951 appropriation requirements.

TABLE NO. 20.—*Obligated balances—Appropriated funds for accrued leave, fiscal year 1949*

	Balance July 1, 1948	Accruals	Charges	Balance June 30, 1949
Electrical division.....	\$268, 192. 73	\$143, 698. 75	\$146, 713. 56	\$265, 177. 92
Municipal division.....	136, 290. 24	139, 709. 22	125, 454. 81	150, 553. 65
Shops and dry docks.....	234, 615. 95	546, 888. 62	635, 215. 14	146, 289. 43
Motor transportation division.....	191, 350. 26	131, 811. 43	135, 202. 12	187, 959. 57
Building division.....	134, 186. 99	142, 936. 32	142, 541. 50	134, 581. 81
Special engineering division.....	225, 224. 53	4, 394. 05	120, 231. 31	109, 387. 27
Total reserve for leave.....	1, 189, 869. 70	1, 109, 438. 39	1, 305, 358. 44	993, 949. 65
Less: Funds transferred to augment replacement funds, in fiscal year 1937.....	250, 000. 00			250, 000. 00
Balance, appropriated funds for accrued leave.....	939, 869. 70			743, 949. 65

¹ Includes \$49,088.62 for leave transferred to other divisions.

The foregoing table represents the reserve for vacation pay due employees of the principal business divisions and special engineering division, and the funds obligated therefor. The reserve is credited by adding a percentage to direct labor charges for work performed by the divisions listed above to the credit of this account. The account is debited with the amount paid to employees when leave is actually taken.

TABLE NO. 21.—*Working capital*

ASSETS	
Cash (table No. 2).....	\$15, 432, 887. 84
Accounts receivable (table No. 3).....	2, 049, 166. 40
Materials and supplies (table No. 4).....	12, 822, 149. 35
Work in progress (table No. 5).....	299, 396. 76
Deferred debits (table No. 6).....	316, 170. 52
Total.....	30, 919, 770. 87
LIABILITIES	
Accounts payable (table No. 14).....	4, 589, 168. 08
Profits of business operations (table No. 15).....	845, 370. 44
Unliquidated obligations (table No. 16).....	3, 353, 304. 91
Deferred credits (table No. 17).....	131, 904. 25
Total.....	8, 919, 747. 68
New assets.....	22, 000, 023. 19
Less: Obligated balances—Appropriated funds.....	12, 000, 023. 19
Working capital.....	10, 000, 000. 00

A revolving fund now fixed at \$10,000,000 is set up in Canal accounting for working capital and is credited to capital investment account in addition to funds used for construction and equipment, the

total constituting the base for capital interest computations. The balance of \$12,000,023.19 in excess of the revolving fund represents obligated balances of appropriated funds shown on the balance sheet, table No. 1, under Equity of United States Government.

TABLE NO. 22.—*Capital investment*

Appropriation for Canal construction to July 1, 1921 (detail in annual report for 1924, table No. 3).....	\$386, 910, 301. 00
Deduct value of capital stock of the Panama Railroad Company.....	7, 000, 000. 00
Net construction appropriations.....	379, 910, 301. 00
Annual payments to the Republic of Panama, 1913 to 1920 (State Department).....	2, 000, 000. 00
Additional construction funds, July 1, 1921, to July 1, 1949----	221, 006, 446. 50
Total appropriations.....	602, 916, 747. 50
Interest on construction funds (compounded annually) 1904 to 1920.....	128, 991, 063. 00
Total.....	731, 907, 810. 50

The capital investment account covers the following assets, showing the total as of July 1, 1948, the increase for the current fiscal year, and the total as of June 30, 1949:

	July 1, 1948	Increase	June 30, 1949
Buildings and structures (general) (table No. 8).....	\$109, 193, 181. 66	\$2, 893, 809. 84	\$112, 086, 991. 50
Floating plant (table No. 9).....	13, 199, 254. 15	1, 276, 556. 80	14, 475, 810. 95
Business operations structures (table No. 10).....	46, 704, 134. 07	6, 361, 757. 34	53, 065, 891. 41
Business operations equipment (table No. 11).....	5, 354, 256. 55	1, 643, 229. 21	6, 997, 485. 76
Total depreciable assets.....	174, 450, 826. 43	12, 175, 353. 19	186, 626, 179. 62
Nondepreciable assets (table No. 13).....	394, 357, 597. 29	2, 022, 774. 84	396, 380, 372. 13
Special item projects.....	69, 448, 907. 67	(590, 934. 19)	68, 857, 973. 48
Additional facilities.....	76, 614, 879. 83	(6, 571, 594. 56)	70, 043, 285. 27
Working capital (table No. 21).....	10, 000, 000. 00	-----	10, 000, 000. 00
Total.....	724, 872, 211. 22	7, 035, 599. 28	731, 907, 810. 50
Less: Accrued depreciation (table No. 12).....	55, 852, 266. 00	3, 007, 329. 15	58, 859, 595. 15
Total capital investment.....	669, 019, 945. 22	4, 028, 270. 13	673, 048, 215. 35

NOTE.—Figures in parentheses denote decrease.

The total capital investment at the close of the fiscal year 1949 amounted to \$673,048,215.35. The increase of \$4,028,270.13 is due to the making of necessary additions to plant and equipment, less accrued depreciation, as shown in tables Nos. 8, 9, 10, 11, 12, 13, and 21.

Interest on the investment from 1921 to date is considered as a charge to operating expenses, and while this charge does not appear on the balance sheet, a statement of such interest compared with net revenues, by years, is shown in table No. 24. Interest for the

current fiscal year is based upon an investment of \$522,956,157.72, as of July 1, 1948, as follows, which does not include investment in special item projects or additional facilities, and amounts to \$15,688,684.73.

Buildings and structures (general).....	\$109, 193, 181. 66
Floating plant.....	13, 199, 254. 15
Business operations structures.....	46, 704, 134. 07
Business operations equipment.....	5, 354, 256. 55
Nondepreciable assets.....	394, 357, 597. 29
Working capital.....	10, 000, 000. 00
Subtotal.....	578, 808, 423. 72
Less: Accrued depreciation.....	55, 852, 266. 00
Net capital investment for interest.....	522, 956, 157. 72

TABLE No. 23.—Consolidated statement of income, expenses, and net revenues

	Fiscal year 1949	Fiscal year 1948
Canal operations:		
Canal revenues:		
Tolls.....	\$20, 612, 042. 88	\$20, 004, 310. 38
Postal surplus.....	(117, 762. 65)	65, 829. 42
Other miscellaneous receipts.....	250, 630. 55	228, 120. 90
Total canal revenues (table No. 26).....	20, 744, 910. 78	20, 298, 260. 70
Canal earnings (table No. 27).....	8, 147, 260. 89	8, 473, 983. 04
Total revenues.....	28, 892, 171. 67	28, 772, 243. 74
Canal expenses:		
Management.....	168, 996. 40	145, 206. 94
Operation and maintenance.....	13, 369, 568. 91	13, 137, 875. 76
Utilities and services.....	5, 200, 986. 66	4, 751, 234. 88
Sanitation.....	6, 154, 312. 93	5, 652, 259. 39
Civil government.....	3, 637, 234. 70	3, 251, 489. 24
Postal service.....	833, 656. 40	770, 983. 49
Total expenses.....	29, 364, 756. 00	27, 709, 049. 70
Net Canal revenues or (deficit) (table No. 27).....	(472, 584. 33)	1, 063, 194. 04
Fixed capital charge.....	14, 555, 762. 93	14, 398, 631. 65
Surplus or (deficit).....	(15, 028, 347. 26)	(13, 335, 437. 61)
Business operations:		
Business revenues.....	35, 081, 873. 50	35, 036, 013. 48
Business expenses.....	34, 074, 914. 46	33, 476, 534. 77
Net business revenues.....	1, 006, 959. 04	1, 559, 478. 71
Fixed capital charge.....	1, 132, 921. 80	1, 091, 338. 20
Surplus or (deficit).....	(125, 962. 76)	468, 140. 51
Combined operations:		
Revenues.....	63, 974, 045. 17	63, 808, 257. 22
Expenses.....	63, 439, 670. 46	61, 185, 584. 47
Net revenues.....	534, 374. 71	2, 622, 672. 75
Fixed capital, charge at 3 percent.....	15, 688, 684. 73	15, 489, 969. 85
Surplus or (deficit).....	(15, 154, 310. 02)	(12, 867, 297. 10)
Net capital investment (table No. 22).....	522, 956, 157. 72	516, 332, 328. 23
Combined net revenues.....	534, 374. 71	2, 622, 672. 75
Percent of capital return.....	0.10	0.51

NOTE.—Figures in parentheses denote deficit.

A summary comparison of net revenues and capital interest, by years, from 1921 to date, is shown in table No. 24, following, together with a brief description of accounting policy governing charges to operating expenses.

Table No. 27, Canal earnings and expenses, details by function earnings and expenses for the fiscal year 1949.

The net business revenues of \$1,006,959.04 has been reduced by a net reduction of \$161,588.60 representing prior year adjustments as detailed in table No. 15.

TABLE No. 24.—*Revenues, expenses, and computed surplus*

Fiscal year	Tolls	Civil revenues	Business profits	Total revenues	Net appropriations expenses ¹	Net revenues	Capital interest, 3 percent ²	Computed surplus ³
1914-20.....	\$33,303,581.07	\$1,206,579.86	\$536,098.34	\$35,046,259.87	\$36,657,765.89	(\$1,611,507.02)		(\$1,611,507.02)
1921.....	11,261,919.31	213,986.19	564,211.20	12,040,116.70	9,578,300.14	2,461,816.56	\$14,674,964.74	(12,213,148.18)
1922.....	11,193,883.47	192,208.85	323,259.16	11,708,851.48	8,493,017.63	3,299,833.85	\$15,263,780.02	(12,013,946.17)
1923.....	17,507,630.52	184,213.54	1,140,642.50	18,832,486.56	8,240,777.56	10,591,709.00	\$15,202,430.18	(4,610,721.18)
1924.....	24,289,603.16	392,250.73	901,624.12	25,583,478.01	8,923,905.39	16,659,572.62	\$15,090,900.33	1,408,572.29
1925.....	21,374,664.12	297,954.04	765,916.85	22,438,535.01	8,666,933.44	13,681,841.57	\$15,039,730.49	(1,417,888.62)
1926.....	22,927,455.03	217,680.50	841,310.29	23,986,445.82	8,543,468.47	15,442,978.35	\$15,085,580.64	357,397.71
1927.....	24,217,185.32	301,623.57	876,536.80	25,395,345.69	9,547,715.02	15,937,630.60	\$15,068,580.79	879,049.81
1928.....	26,943,513.11	232,552.57	736,713.43	27,912,765.11	9,501,200.82	18,411,564.29	\$15,063,029.29	3,376,535.00
1929.....	27,123,534.33	349,255.35	737,890.26	28,104,775.98	10,187,150.71	17,917,625.27	\$15,013,374.55	2,904,250.72
1930.....	27,077,117.36	349,255.35	760,971.66	28,187,344.37	9,893,920.33	18,293,423.04	\$14,987,527.89	3,305,895.55
1931.....	24,644,550.39	346,030.35	562,764.17	25,553,344.91	10,693,353.53	14,859,991.38	\$14,986,578.04	(125,586.66)
1932.....	20,706,508.49	327,444.23	557,095.44	21,591,048.16	10,239,211.84	11,351,836.32	\$14,943,807.66	(3,591,911.34)
1933.....	19,621,158.61	310,014.16	1,135,708.62	21,066,881.39	9,555,672.02	11,511,209.37	\$14,907,732.16	(3,396,522.79)
1934.....	24,065,065.16	96,666.67	1,366,755.12	25,528,486.95	7,931,383.77	17,597,103.18	\$15,039,203.81	2,557,869.37
1935.....	23,338,977.90	81,957.68	1,021,216.61	24,442,152.19	9,481,429.57	14,960,722.62	\$15,124,193.39	(163,470.77)
1936.....	23,506,806.46	119,915.21	920,185.23	24,546,906.90	9,675,067.13	14,871,839.77	\$15,159,597.04	(287,757.27)
1937.....	23,147,433.54	98,775.74	917,360.14	24,163,569.42	9,289,624.05	13,873,945.37	\$15,205,397.30	(1,331,451.93)
1938.....	23,215,192.39	90,335.19	824,612.60	24,130,140.18	9,575,624.32	14,554,515.86	\$15,229,992.24	(675,476.38)
1939.....	23,699,413.82	106,929.55	881,272.48	24,487,615.85	10,041,950.30	12,287,669.55	\$15,250,404.68	(908,061.01)
1940.....	18,100,379.36	275,775.08	1,008,741.70	19,474,896.14	9,614,117.00	9,860,778.54	\$15,275,108.42	(2,955,578.11)
1941.....	17,723,423.42	421,943.29	734,465.84	18,879,832.55	9,406,901.39	9,472,931.16	\$15,301,998.50	(5,414,323.88)
1942.....	7,772,112.42	54,943.70	1,492,542.70	8,916,107.14	11,268,564.33	(2,352,397.25)	\$15,432,220.92	(17,784,018.17)
1943.....	7,308,680.74	54,943.70	1,553,294.06	7,296,533.67	12,634,164.42	(5,337,630.75)	\$15,483,065.43	(20,851,236.18)
1944.....	5,473,846.30	239,333.31	1,469,183.52	8,980,555.06	13,905,470.81	(5,474,915.75)	\$15,475,539.95	(20,450,455.70)
1945.....	7,222,656.14	238,715.40	1,469,183.52	8,980,555.06	15,214,130.16	6,227,000.91	\$15,427,340.89	(15,374,370.37)
1946.....	14,791,807.14	207,684.60	2,007,608.91	15,257,100.65	18,073,909.26	1,404,328.25	\$15,477,771.34	(14,073,443.09)
1947.....	17,642,146.24	109,811.83	1,726,279.44	19,478,237.51	21,526,724.30	2,353,994.28	\$15,489,969.85	(13,315,975.57)
1948.....	20,004,310.38	293,950.32	1,582,457.88	21,880,718.58	21,217,495.11	372,786.11	\$15,688,084.73	(15,315,988.62)
1949.....	20,612,042.88	132,867.90	945,370.44	21,590,281.22	21,217,495.11	273,906,731.30	440,714,282.90	(166,807,551.60)
Total.....	595,419,979.80	7,360,793.48	27,825,941.57	630,006,714.85	356,699,983.55	273,906,731.30	440,714,282.90	(166,807,551.60)

¹ After deduction of Canal earnings repaid to appropriations.² Interest prior to July 12, 1920, is included in capital investment account.³ Parentheses denotes deficits.⁴ Includes adjustment of \$15,027.41 in postal surplus.⁵ Includes adjustment of \$44,099.80 in postal surplus.⁶ Actual business profits of \$876,835.29 have been adjusted by \$669,226.38 for write-off of reimbursable capital expenditures, public works, Republic of Panama.⁷ Includes business profits of \$1,559,478.71 for fiscal year 1948 and an additional amount for prior fiscal years of \$22,979.17, as detailed in table No. 15.⁸ Includes \$291,657.64 for judgments rendered by court of claims for overtime compensation in prior years.⁹ Actual business profits of \$1,006,959.04 have been adjusted by a net reduction in the amount of \$161,588.60 for prior fiscal years as detailed in table No. 15.

The foregoing table summarizes by classes the revenues received by The Panama Canal by fiscal years from 1921 and shows the net results from operations after deducting therefrom the net current expenses chargeable to appropriations and the current interest charge on the capital investment. The interest rate of 3 percent has been used in making computations a great many years. The use of this rate received the approval of two organizations which investigated Panama Canal matters and was formally adopted when the present accounting system was established in 1932. It has been considered a fair and reasonable rate, as the Government at various times has paid much higher rates for the use of money.

Interest chargeable to operations is not included on the balance sheet and no interest charge against the Canal is actually made by the United States Treasury.

Total revenues on the foregoing statement represent receipts which must be covered into the United States Treasury and relinquished from control of The Panama Canal. Earnings repayable to Canal appropriations, and reexpendable by the Canal, are deducted from gross operating expenditures, in order to present a comparison of funds covered into the treasury with funds chargeable to operating account, exclusive of capital additions.

The absence of tax charges is compensated for by the inclusion in Canal operating accounts of the direct costs of civil government, health and welfare activities. Neither capital nor operating expenses of The Panama Canal include the cost of the military and naval establishments on the Isthmus; however, all important exchanges of services with those interests are covered by cash settlements, or reciprocal allowances.

By including in the accounts all revenues properly applicable to Canal activities and by charging against the total revenue the net appropriation expenses, including charges for depreciation and interest at 3 percent on the capital invested but excluding any charge to amortize the investment, there has accumulated as of June 30, 1949, as shown by the above table, a deficit of \$166,807,551.60.

TABLE No. 25 *Capital refundments*

Balance June 30, 1948-----	\$316, 084, 769. 31
Cash covered into United States Treasury-----	22, 460, 965. 23
Business profits (table No. 2)-----	\$1, 582, 457. 88
Revenue due United States Treasury (table No. 7)-----	20, 878, 507. 35
Total-----	338, 545, 734. 54
Appropriations, fiscal year 1949 (detail below)-----	24, 134, 654. 90
Less: Net capital additions, current year (table No. 22)-----	7, 035, 599. 28
Net appropriation for operating account and incomplete construction-----	17, 099, 055. 62
Net capital refundments, June 30, 1949-----	321, 446, 678. 92

*Schedule of Operating Appropriations*¹

Fiscal year	Maintenance and operation	Sanitation	Civil government	Construction, additional facilities	Miscellaneous	Annual payment to Panama	Total
1914 to 1928-----	\$83, 826, 211	\$9, 379, 482	\$11, 190, 470		2 \$151, 344. 55	\$ 2, 000, 000	\$106, 517, 507. 55
1929-----	6, 832, 000	722, 000	1, 172, 400			250, 000	8, 976, 400. 00
1930-----	8, 000, 000	820, 000	1, 201, 000			250, 000	10, 271, 000. 00
1931-----	10, 162, 470	753, 900	1, 295, 190			250, 000	12, 461, 560. 00
1932-----	9, 359, 808	782, 189	1, 351, 689			250, 000	11, 743, 686. 00
1933-----	11, 891, 011	755, 650	1, 300, 000			250, 000	14, 196, 661. 00
1934-----	11, 172, 700	698, 426	1, 235, 278		4 1, 150, 000. 00	430, 000	14, 686, 404. 00
1935-----	4, 971, 490	768, 301	732, 935			430, 000	6, 982, 926. 00
1936-----	6, 900, 000	874, 016	1, 022, 981			430, 000	9, 227, 987. 00
1937-----	9, 149, 201	899, 793	1, 073, 950		5 5, 000. 00	430, 000	11, 552, 944. 00
1938-----	8, 519, 000	918, 000	1, 131, 760		9 155, 000. 00	430, 000	11, 003, 700. 00
1939-----	8, 149, 000	933, 800	1, 167, 325		6 36, 307. 87	430, 000	10, 835, 125. 00
1940-----	22, 823, 087	1, 004, 535	1, 180, 802		7 325, 000. 00	430, 000	25, 474, 731. 87
1941-----	38, 292, 667	1, 045, 393	1, 192, 011	\$15, 000, 000		430, 000	56, 285, 071. 00
1942-----	29, 595, 286	1, 635, 223	1, 295, 017	34, 932, 000		430, 000	67, 887, 526. 00
1943-----	40, 152, 437	1, 692, 800	1, 609, 373	56, 826, 800	8 277, 000. 00	430, 000	100, 988, 410. 00
1944-----	6, 016, 000	1, 814, 000	1, 228, 100	9 (30, 257, 572)	8 (40, 000. 00)	430, 000	(20, 809, 472. 00)
1945-----	5, 850, 000	1, 854, 000	1, 476, 400			430, 000	9, 610, 400. 00
1946-----	10 (276, 000)	2, 261, 200	1, 756, 000			430, 000	7, 575, 308. 25
1947-----	12, 749, 000	2, 860, 000	2, 763, 000	11 3, 428, 600	8 (24, 491. 74)	430, 000	18, 802, 000. 00

1948	13,374,000	3,552,000	2,900,000	750,000	12,508,987.88	430,000	21,514,987.88
1949	13,149,000	4,200,000	3,277,313	100,000	19,297,341.90	430,000	24,134,654.90
Total	360,458,308	40,225,508	42,582,994	80,779,828	5,522,490.46	10,130,000	539,899,188.45
Less: Net capital additions, 1922 to 1949 (table No. 22)							221,005,446.50
Net appropriation for Canal maintenance and operation and incomplete construction							318,892,741.96

¹ Operating appropriations include authorization for capital construction.

² Appropriations for increase in compensation.

³ Covers payments to Panama 1921 to 1928. Payments from 1913 to 1920 charged to cost of construction, \$2,000,000.

⁴ N.R.A. \$1,000,000; repatriation of unemployed aliens, \$150,000.

⁵ Appropriation for memorial to Maj. Gen. George W. Goethals.

⁶ Navy appropriation for frequency changer, Balboa.

⁷ Appropriation for construction of Trans-Isthmian Highway.

⁸ Transfer from Public Works Administration, F.W.A., for recreational facilities; \$64,491.74 refunded and balance of \$242,508.26 disposed of per note 12.

⁹ Refunded to the United States Treasury in accordance with proviso "That \$30,257,572 of the appropriation 'Construction, additional facilities, Panama Canal' is hereby repealed." (1945 Appropriation Act, Public Law 352, approved June 26, 1941.)

¹⁰ Appropriation for 1946 of \$1,724,000 less \$5,000,000 refunded to the United States Treasury in accordance with First Supplemental Surplus Appropriation Reversion Act, 1946, Public Law 301, approved Feb. 18, 1946.

¹¹ Includes \$2,618,000 in 1947. Appropriation Act made available in fiscal year 1946.

¹² This amount is made up as follows:

- (a) Judgment, court of claims, in favor of Callahan Construction Co. and others in connection with construction of Madden Dam, funds appropriated in 1941 \$303,566.63
- (b) Judgments, court of claims, in favor of sundry persons covering prior

years' overtime compensation for certain employees in Canal service; funds appropriated as follows:

1945	\$5,137.57
1946	292.34
1948	286,297.73

(c) Judgment, district court, in favor of Playa de Flor Land and Improvement Co. for land within the Canal Zone, funds appropriated in 1948

Subtotal	\$291,637.64
(d) Less construction cost of Gatun clubhouse in the amount of \$145,242.37, and La Boca theater in the amount of \$67,265.89 from funds obtained in fiscal year 1943 by transfer from Public Works Administration, accounted for in Panama Canal clubhouse accounts	126,271.87
Total	721,496.14

(d) Equipment and structures transferred from U. S. Navy under provisions of Public Law 100 as follows: tug U. S. S. *Gorgona II*, \$339,570; tug U. S. S. *Tahoga*, \$618,249; tug U. S. S. *Limon*, \$345,022; tug U. S. S. *Toro*, \$54,148; building No. 1706, Cristobal, \$1,000.

(b) Cost of roads constructed in the Canal Zone by the Public Roads Administration of the Federal Works Agency, \$1,617,352.90.

The total deposits covered into the United States Treasury from the beginning of Canal construction, with minor adjustments to reconcile changes in accounting process, amount to \$640,339,420.88, and, deducting therefrom net appropriations for operation and incomplete construction amounting to \$318,892,741.96, as shown in table No. 25, produce the net capital refundment balance of \$321,446,678.92. Deposits covered into the Treasury consist principally of the earned revenues cited in table No. 24, which total \$630,606,714.85, the balance being made up of sales of property, principally during the construction period, and return of appropriation balances.

Although the foregoing table shows a net cash refundment of \$321,446,678.92, such refundment is not deductible from net capital investment as shown in table No. 22, which is considered as measuring the value of The Panama Canal as an instrument of public utility upon which a perpetual return should be earned; furthermore, annual interest on net asset valuation chargeable to operating account is not included in cash transactions with the United States Treasury. Such interest at 3 percent from 1921 to 1949 would have amounted to \$440,714,282.90, as shown in table No. 24, and would have extinguished all capital refundments to date, if such interest charges had been assessed against Canal revenues.

TABLE NO. 26.—*Canal revenues*

	Fiscal year 1949	Fiscal year 1948
Tolls.....	\$20,612,042.88	\$20,004,310.38
Postal surplus.....	(117,762.65)	65,829.42
Licenses, fees, fines, etc.....	241,053.10	224,107.30
Miscellaneous.....	9,577.45	4,013.60
Total.....	20,744,910.78	20,298,260.70

[NOTE.—Figures in parentheses denote deficit.

Canal revenues shown above, with the exception of net postal receipts which are carried forward from year to year, comprise earnings which by law must be covered into the United States Treasury as miscellaneous receipts, United States revenues, as distinguished from earnings repayable to Canal appropriations shown on tables Nos. 15 and 27.

TABLE NO. 27.—*Canal earnings and expenses*

	Expenses	Earnings	Net expenses
Maintenance and operation:			
Management:			
Office of Governor.....	\$35,786.58	\$14,400.00	\$21,386.58
Office of engineer of maintenance.....	92,485.63	19,224.25	73,261.38
Office of director of finance and budget officer.....	40,724.19	14,640.00	26,084.19
Total.....	168,996.40	48,264.25	120,732.15
Canal operation and maintenance:			
Office of assistant engineer of maintenance.....	21,151.97		21,151.97
Locks operation and maintenance.....	3,697,513.01		3,697,513.01
Locks quadrennial overhaul.....	20,064.50		20,064.50
Office engineering division.....	527,509.96	387,069.67	140,440.29
Section of meteorology and hydrography.....	88,866.29		88,866.29
Marine division.....	3,531,060.41	1,740,427.73	1,791,232.68
Dredging division.....	3,457,075.15	243,607.39	3,213,467.76
Dams, reservoirs, and spillways.....	95,727.62		95,727.62
Depreciation on Canal general property.....	1,500,000.00		1,500,000.00
Annual payment to Republic of Panama.....	430,000.00		430,000.00
Total.....	13,369,568.91	2,371,104.79	10,998,464.12
Utilities and services:			
Public buildings and grounds.....	944,304.20	608,799.90	335,504.30
Highways.....	688,951.63	6,818.80	682,132.83
Sewers.....	36,676.99		36,676.99
Air terminal.....	125,130.02	101,771.15	23,358.87
Personnel administration.....	974,447.82	349,994.83	624,452.99
General correspondence and records.....	265,622.07	85,697.17	179,924.90
Office of general counsel.....	32,419.92	12,960.00	19,459.92
Department of finance.....	1,286,008.47	876,373.85	409,634.62
Offices in the United States.....	584,672.47	216,072.47	368,600.00
Omitted overtime claims (maintenance and operation).....	262,753.07		262,753.07
Total.....	5,200,986.66	2,258,488.17	2,942,498.49
Total, maintenance and operation.....	18,739,551.97	4,677,857.21	14,061,694.76
Sanitation:			
Chief health office.....	86,138.26	287.40	85,850.86
Hospitals.....	3,893,836.52	1,232,010.26	2,661,826.26
Dental clinics.....	89,192.06	87,127.13	2,064.93
Venereal disease clinics.....	157,233.61		157,233.61
Dispensaries.....	421,902.30	164,924.58	256,977.72
Cemeteries.....	51,813.55	7,498.50	44,315.05
Quarantine and immigration.....	169,395.17	76,129.96	93,265.21
Sanitation.....	1,284,801.46	719,984.68	564,816.78
Total, sanitation.....	6,154,312.93	2,287,962.51	3,866,350.42
Civil government:			
Office of executive secretary.....	26,681.85		26,681.85
Civil affairs division.....	292,254.43	3,594.80	288,659.63
License bureau.....	27,762.52		27,762.52
Schools.....	1,387,789.44	154,443.25	1,233,346.19
Library.....	55,591.26	6,591.52	48,999.74
Physical education and recreation.....	229,328.88	16,072.25	213,256.63
Police section.....	1,133,498.16	166,846.92	966,651.24
Fire section.....	437,411.87	236.03	437,175.84
Courts.....	46,916.29		46,916.29
Total, civil government.....	3,637,234.70	347,784.77	3,289,449.93
Postal service.....	833,656.40	715,893.75	117,762.65
Transferred from postal surplus.....		117,762.65	(117,762.65)
Total, postal service.....	833,656.40	833,656.40	
Total.....	29,364,756.00	8,147,260.89	21,217,495.11

SUMMARY

Canal revenues (table No. 26).....	\$20,744,910.78
Net Canal expenses.....	21,217,495.11
Net Canal deficit (table No. 23).....	(472,584.33)

NOTE.—Figures in parentheses denote deficit.

The earnings of the divisions engaged in the transiting of vessels through the Canal, as well as earnings of sanitation and civil government divisions, are deducted from gross expenses to arrive at the net expenditure from Canal appropriations, which in turn is deducted from Canal revenues to arrive at net Canal revenues, exclusive of business division profits.

Earnings of the executive offices and department of finance represent principally a proportional charge against business divisions of The Panama Canal and the Panama Railroad Company. Business divisions are reimbursed for this proportional expense by adding a percentage of overhead to the direct cost of all work performed. The Panama Railroad's proportion is distributed to the various units of that organization.

The earnings of the offices in the United States comprise charges against storehouse operations to cover a proportional part of the cost of purchasing, inspection, and handling of material used by divisions and the Panama Railroad Company or sold to outside interests, which expense is recovered by adding a fixed percentage to the price of material.

TABLE No. 28.—*Balances in appropriations and funds, June 30, 1949*

ASSETS						
U. S. Treasury appropriations	Cash on hand	Accounts receivable	Transfers available	Work in progress and suspense	Storehouse stock	Total
Maintenance and operation, Panama Canal	\$9,135,834.03	\$3,385,295.78	\$3,589.02	\$589,285.77	\$12,391,518.24	\$27,409,002.09
Sanitation, Canal Zone, Panama Canal	680,803.77	303,294.02	171,170.04	22,350.29	430,631.11	1,698,249.23
Civil government, Panama Canal and Canal Zone	11,359.36	246,403.07	16,809.12	130.00		274,701.55
Postal funds, Canal Zone (special fund)	368,074.03	113,300.94	3,188.03			514,563.00
Repatriation of unemployed aliens, Panama Canal	10,000.00	11,537.37				21,537.37
Memorial to Maj. Gen. George W. Goethals	156,508.58			3,491.42		160,000.00
Construction, additional facilities, Panama Canal	721,270.78	4,519.96	67,808.11	309.80		950,737.26
Working funds, Panama Canal: Hospitalization of military personnel		12,377.50				12,377.50
Miscellaneous receipts, United States revenues		17,803.65	845,370.44			1,088,722.91
Total	11,083,850.55	4,306,930.94	966,707.57	615,567.28	12,822,149.35	32,129,890.91
LIABILITIES						
Working capital allotment	Accounts payable	Transfers payable	Special liabilities	Funded reserves	Appropriation balance	Total
Maintenance and operation, Panama Canal	\$9,510,000.00	\$2,708,155.68	\$3,793,183.88	\$6,052,473.79	\$4,439,818.30	\$27,409,002.09
Sanitation, Canal Zone, Panama Canal	480,000.00	365,169.27	301,915.46		476,583.52	1,698,249.23
Civil government, Panama Canal and Canal Zone	10,000.00	135,998.16	57,321.01		37,995.12	274,701.55
Postal funds, Canal Zone (special fund)		33,387.26	57,321.01		57,784.07	511,563.00
Repatriation of unemployed aliens, Panama Canal		35,046.17	419,375.49		57,784.07	511,563.00
Memorial to Maj. Gen. George W. Goethals		63.42	152.22		21,321.73	21,537.37
Construction, additional facilities, Panama Canal				109,387.27	160,000.00	160,000.00
Working funds, Panama Canal: Hospitalization of military personnel		21,006.44	175,084.76		644,658.79	950,737.26
Miscellaneous receipts, United States revenues		10,920.00	1,457.50			12,377.50
Total	10,000,000.00	4,414,162.05	4,748,938.10	6,161,861.06	5,838,162.13	32,129,890.91

The foregoing table shows the status of Panama Canal working capital by the various appropriations and funds by which it is separately accountable under existing laws and Treasury regulations.

A revolving fund of \$10,000,000 is set aside in Canal accounting to cover the net investment in current accounts, which sum is included in the capital investment account (table No. 22).

Tables Nos. 18, 19, and 20 show the detail of the funded reserves stated in the foregoing table as \$6,161,861.06.

REPORT OF THE GOVERNOR OF THE PANAMA CANAL

No. 29.—*Ocean-going tolls-paying traffic¹ for fiscal years 1915 to 1949*

Calendar year ended June 30—	Number of transits	Panama Canal net tonnage ²	Tolls	Tons of cargo
1915 ³	1,058	3,507,000	\$4,366,747.13	4,888,400
1916 ⁴	724	2,212,000	2,403,089.40	3,093,335
1917.....	1,738	5,357,000	5,620,799.83	7,054,720
1918.....	1,989	6,072,000	6,428,780.26	7,525,768
1919.....	1,948	5,658,000	6,164,290.79	6,910,097
1920.....	2,393	7,898,000	8,507,938.68	9,372,374
1921.....	2,791	10,550,000	11,268,681.46	11,595,971
1922.....	2,665	10,556,000	11,191,828.56	10,882,607
1923.....	3,908	17,206,000	17,504,027.19	19,566,429
1924.....	5,158	24,181,000	24,284,659.92	26,993,167
1925.....	4,592	21,134,000	21,393,718.01	23,956,549
1926.....	5,087	22,906,000	22,919,931.89	26,030,016
1927.....	5,293	24,245,000	24,212,250.61	27,733,555
1928.....	6,253	27,229,000	26,922,200.75	29,615,651
1929.....	6,289	27,585,000	27,111,125.47	30,647,768
1930.....	6,027	27,716,000	27,059,998.94	30,018,429
1931.....	5,370	25,690,000	24,624,599.76	25,065,283
1932.....	4,362	21,842,000	20,694,704.61	19,798,986
1933.....	4,162	21,094,000	19,601,077.17	18,161,165
1934.....	5,234	26,410,000	24,047,183.44	24,704,009
1935.....	5,180	25,720,000	23,307,062.93	25,309,527
1936.....	5,382	25,923,000	23,479,114.21	26,505,943
1937.....	5,387	25,430,000	23,102,137.12	28,108,375
1938.....	5,524	25,950,383	23,169,888.70	27,385,924
1939.....	5,903	27,170,007	23,661,021.08	27,866,627
1940.....	5,370	24,144,366	21,144,675.36	27,299,016
1941.....	4,727	20,642,736	18,157,739.68	24,950,791
1942.....	2,688	11,010,004	9,752,207.38	13,607,444
1943.....	1,822	8,233,999	7,356,684.94	10,599,966
1944.....	1,562	6,073,457	5,456,163.32	7,003,487
1945.....	1,939	8,380,959	7,243,601.58	8,603,607
1946.....	3,747	17,516,517	14,773,692.98	14,977,940
1947.....	4,260	20,233,043	17,596,602.46	21,670,518
1948.....	4,678	22,902,064	19,956,593.28	24,117,788
1949.....	4,793	23,473,236	20,541,229.52	25,305,158
Total.....	140,003	631,851,771	595,026,048.41	676,926,390

¹ Includes only vessels of 300 net tons and over (Panama Canal measurement) for vessels rated on net tonnage, or 500 tons displacement and over for vessels rated on displacement tonnage.

² Panama Canal net tonnages prior to 1939 are estimated figures based on revised measurement rules which became effective Mar. 1, 1938.

³ Canal opened to traffic Aug. 15, 1914.

⁴ Canal closed to traffic approximately 7 months of fiscal year by slides.

TABLE NO. 30.—*Traffic by months, fiscal years 1949 and 1948*

	Number of transits		Panama Canal net tonnage		Tons of cargo		Tolls	
	1948-49	1947-48	1948-49	1947-48	1948-49	1947-48	1948-49	1947-48
July.....	399	417	1,913,640	2,000,374	1,940,079	2,090,051	\$1,673,854.18	\$1,742,545.26
August.....	399	371	1,993,717	1,797,965	2,021,104	1,928,067	1,737,311.02	1,574,479.08
September.....	415	366	1,998,848	1,727,996	1,954,184	1,812,901	1,740,919.54	1,511,868.34
October.....	372	369	1,737,939	1,788,477	1,642,235	1,884,360	1,495,133.64	1,559,157.38
November.....	353	367	1,683,815	1,776,254	1,763,813	1,885,808	1,454,717.06	1,348,179.06
December.....	357	416	1,730,754	2,073,866	1,826,799	2,161,904	1,505,699.28	1,803,909.46
January.....	407	359	2,006,465	1,793,742	2,341,147	1,935,275	1,771,576.20	1,555,916.04
February.....	373	393	1,790,245	1,969,735	1,981,340	2,097,856	1,573,273.30	1,707,162.64
March.....	447	399	2,221,194	1,971,311	2,553,732	2,143,113	1,958,738.20	1,716,568.10
April.....	433	407	2,136,288	2,006,341	2,524,730	2,064,046	1,887,087.86	1,750,179.76
May.....	421	398	2,145,634	1,957,852	2,426,019	1,989,687	1,879,982.28	1,703,338.20
June.....	417	416	2,114,697	2,038,151	2,329,976	2,124,720	1,862,936.36	1,783,289.96
Total.....	4,793	4,678	23,473,236	22,902,064	25,305,158	24,117,788	20,541,229.52	19,956,593.28
Average per month..	399	390	1,956,103	1,908,505	2,108,763	2,009,816	1,711,769.13	1,663,049.44

NOTE.—The above includes only tolls-paying vessels of 300 net tons or over, Panama Canal measurement, or of 500 displacement tons or over on vessels rated on displacement basis (dredges, warships, etc.).

TABLE NO. 31.—*Canal traffic*¹ *by nationality of vessels, fiscal year 1949*

Nationality	Number of transits	Measured tonnage			Tolls	Tons of cargo
		Panama Canal net	Registered			
			Gross	Net		
Argentine.....	2	10, 792	13, 670	8, 119	\$8, 744. 40	1, 488
Brazilian.....	3	1, 314	2, 270	1, 164	2, 546. 08	
British.....	915	5, 289, 215	6, 980, 178	4, 244, 675	4, 708, 602. 24	5, 631, 876
Chilean.....	64	335, 193	490, 500	284, 919	300, 640. 68	300, 370
Chinese.....	21	75, 519	107, 400	69, 935	72, 384. 04	112, 769
Colombian.....	75	106, 762	170, 118	92, 836	95, 924. 16	88, 431
Danish.....	123	581, 107	655, 607	390, 663	520, 130. 70	546, 035
Ecuadorian.....	38	81, 658	117, 740	64, 664	73, 149. 12	51, 848
Egyptian.....	1	4, 495	6, 240	3, 745	4, 045. 50	3, 400
Finnish.....	1	5, 209	7, 303	4, 964	4, 688. 10	9, 000
French.....	101	488, 153	669, 813	401, 584	439, 726. 04	519, 937
Greek.....	92	477, 764	631, 025	387, 259	418, 925. 16	713, 646
Honduran.....	324	737, 146	1, 196, 341	661, 865	622, 831. 42	497, 580
Icelandic.....	1	4, 877	4, 724	3, 599	3, 511. 44	
Italian.....	34	191, 693	262, 563	157, 909	171, 582. 12	173, 408
Mexican.....	27	137, 717	193, 245	113, 356	111, 163. 86	127, 689
Netherlands.....	122	367, 024	422, 401	246, 909	328, 930. 04	305, 502
Norwegian.....	407	1, 996, 043	2, 384, 224	1, 440, 300	1, 700, 024. 40	1, 758, 830
Panamanian.....	182	776, 884	1, 062, 253	647, 276	656, 311. 04	861, 448
Paraguayan.....	4	1, 510	2, 539	1, 322	1, 359. 00	2, 014
Peruvian.....	30	91, 604	128, 213	75, 211	82, 262. 96	87, 694
Philippine.....	23	109, 382	126, 837	75, 901	98, 443. 80	124, 347
Portuguese.....	11	55, 255	61, 641	39, 799	44, 383. 68	41, 506
Soviet.....	2	10, 444	10, 766	6, 367	9, 399. 60	8, 838
Spanish.....	31	119, 050	162, 968	100, 378	96, 087. 24	114, 554
Swedish.....	164	752, 022	1, 032, 716	654, 274	667, 148. 76	788, 007
Swiss.....	3	17, 112	15, 426	10, 530	15, 400. 80	22, 455
United States.....	1, 970	10, 591, 754	14, 710, 196	8, 603, 244	9, 231, 998. 94	12, 377, 506
Uruguayan.....	1	2, 598	3, 805	2, 123	2, 338. 20	3, 824
Venezuelan.....	21	53, 940	93, 685	48, 925	48, 546. 00	31, 156
Totals:						
1949.....	4, 793	23, 473, 236	31, 726, 407	18, 843, 815	20, 541, 229. 52	25, 305, 158
1948.....	4, 678	22, 902, 064	31, 034, 776	18, 562, 689	19, 956, 593. 28	24, 117, 788
1947.....	4, 260	20, 233, 043	27, 538, 548	16, 455, 773	17, 596, 602. 46	21, 670, 518

NOTE.—In Canal traffic statistics, foreign naval vessels such as transports, supply ships, tankers, etc., with a measurement of 300 net tons (Panama Canal measurement) or more, and vessels of war, dredges, etc., with a displacement of 500 tons or more, are classified as ocean-going tolls-paying vessels. Statistics on these vessels, except such as pertain to displacement tonnage, have been included in the traffic summaries shown in the preceding tables. Since displacement tonnage cannot be combined with net tonnage, the following table presents statistics on the 22 vessels which transited the Canal during the fiscal year 1949 and paid tolls on displacement tonnage:

Nationality	Type	Number of transits	Displacement tonnage	Tolls
Brazilian.....	Naval.....	1	3, 200	\$1, 600. 00
British.....	do.....	11	82, 128	41, 064. 00
Chinese.....	do.....	4	6, 414	3, 207. 00
Chinese.....	Dredge.....	1	3, 911	1, 955. 50
French.....	Naval.....	2	9, 295	4, 647. 50
Netherlands.....	do.....	1	2, 200	1, 100. 00
Peruvian.....	do.....	2	3, 436	1, 718. 00
Total.....	-----	22	110, 584	55, 292. 00

¹ Includes only tolls-paying vessels of 300 net tons or over, Panama Canal measurement, or of 500 displacement tons or over on vessels rated on displacement basis (dredges, warships, etc.).

TABLE No. 32.—Classification of canal traffic¹ by type of vessel, fiscal year 1949

	Vessels of United States registry			Vessels of foreign registry			Total traffic		
	Atlantic to Pacific	Pacific to Atlantic	Total	Atlantic to Pacific	Pacific to Atlantic	Total	Atlantic to Pacific	Pacific to Atlantic	Total
CARGO AND CARGO-PASSENGER SHIPS									
Tank ships, laden:									
Number of transits	57	17	74	121	18	139	178	35	213
Panama Canal net tonnage	353,504	102,848	456,352	664,929	86,443	751,372	1,018,433	189,291	1,207,724
Tolls	\$318,153	\$92,563	\$410,716	\$598,436	\$77,798	\$676,234	\$916,950	\$170,361	\$1,086,950
Cargo (long tons)	627,989	192,713	820,702	1,288,775	158,015	1,446,790	1,916,764	350,728	2,267,492
Tank ships, ballast:									
Number of transits	9	47	56	13	116	129	22	163	185
Panama Canal net tonnage	63,152	272,322	335,474	67,948	619,466	687,414	131,100	891,788	1,022,888
Tolls	\$45,469	\$196,072	\$241,541	\$48,923	\$446,015	\$494,938	\$94,392	\$642,087	\$736,479
Ore ships, laden:									
Number of transits		120	120		8	8		128	128
Panama Canal net tonnage		533,223	533,223		35,072	35,072		508,235	568,235
Tolls		\$479,901	\$479,901		\$31,565	\$31,565		\$511,466	\$511,466
Cargo (long tons)		2,753,850	2,753,850		178,400	178,400		2,932,250	2,932,250
Ore ships, ballast:									
Number of transits	118		118	7		7	125		125
Panama Canal net tonnage	524,351		524,351	30,688		30,688	555,039		555,039
Tolls	\$377,533		\$377,533	\$22,095		\$22,095	\$399,628		\$399,628
Passenger ships, laden: ²									
Number of transits	58	52	110	98	93	191	156	145	301
Panama Canal net tonnage	374,823	326,288	701,111	651,263	634,638	1,285,901	1,026,086	960,926	1,987,012
Tolls	\$293,559	\$263,659	\$557,218	\$586,137	\$571,174	\$1,157,311	\$823,478	\$864,833	\$1,788,311
Cargo (long tons)	233,945	364,557	598,502	350,898	581,214	932,112	584,843	946,071	1,530,914
Passenger ships, ballast: ³									
Number of transits		1	1	2	2	4	2	3	5
Panama Canal net tonnage		8,478	8,478	2,372	12,012	14,384	2,372	20,490	22,862
Tolls		\$6,104	\$6,104	\$1,708	\$8,649	\$10,357	\$1,708	\$14,753	\$16,461
General cargo ships, laden: ³									
Number of transits	565	720	1,285	864	1,143	2,007	1,429	1,863	3,292
Panama Canal net tonnage	3,343,161	3,879,937	7,223,098	3,933,501	4,985,589	8,919,090	7,276,662	8,865,526	16,142,188
Tolls	\$3,008,845	\$3,491,944	\$6,500,789	\$3,540,151	\$4,487,030	\$8,027,181	\$6,548,996	\$7,978,974	\$14,527,970
Cargo (long tons)	3,643,359	4,560,793	8,204,152	3,754,122	6,616,228	10,370,350	7,397,481	11,177,021	18,574,502
General cargo ships, ballast: ³									
Number of transits	161	18	179	295	18	313	456	36	492
Panama Canal net tonnage	650,137	95,797	745,934	1,107,746	42,889	1,150,635	1,757,883	138,686	1,896,569
Tolls	\$408,099	\$68,974	\$477,073	\$797,577	\$30,880	\$828,457	\$1,265,076	\$99,854	\$1,365,530

OTHER TYPE SHIPS									
Naval vessels:									
Number of transits									
Displacement tonnage									
Tolls									
Cable ships, yachts, etc.:									
Number of ships	3	24	27	14	8	422	414	25	8
Panama Canal net tonnage	2,256	61,477	63,733	4,667	2,259	6,926	6,923	63,736	40,519
Tolls	\$2,030	\$45,312	\$47,342	\$3,767	\$2,033	\$5,800	\$5,797	\$47,345	\$20,260
SUMMARY									
Total cargo and cargo-passenger ships, laden:									
Number of transits	680	909	1,589	1,083	1,262	2,345	1,763	2,171	3,434
Panama Canal net tonnage	4,071,488	4,842,266	8,913,784	5,249,693	5,741,742	10,991,435	9,321,181	10,584,038	19,905,219
Tolls	\$3,664,339	\$4,338,067	\$8,022,406	\$4,724,724	\$5,167,867	\$9,892,291	\$8,389,063	\$9,525,634	\$17,914,697
Cargo (long tons)	4,505,293	7,872,213	12,377,506	5,393,795	7,533,857	12,927,652	9,899,088	15,406,070	25,305,158
Total cargo and cargo-passenger ships, ballast:									
Number of transits	288	66	354	317	136	453	605	202	807
Panama Canal net tonnage	1,237,640	376,597	1,614,237	1,208,754	674,367	1,883,121	2,446,394	1,050,964	3,497,358
Tolls	\$891,101	\$271,150	\$1,162,251	\$870,303	\$485,544	\$1,355,847	\$1,761,404	\$756,694	\$2,518,098
Total other type ships:									
Number of transits	3	24	27	16	9	25	19	33	52
Panama Canal net tonnage	2,256	61,477	63,733	4,667	2,259	6,926	6,923	63,736	70,659
Displacement tonnage				70,065	40,519	110,584	70,065	40,519	110,584
Tolls	\$2,030	\$45,312	\$47,342	\$38,800	\$22,293	\$61,093	\$40,880	\$67,065	\$108,435
Grand total ships:									
Number of transits	971	999	1,970	1,416	1,407	2,823	2,387	2,406	4,793
Panama Canal net tonnage	5,311,384	5,280,370	10,591,754	6,463,114	6,418,368	12,881,482	11,774,498	11,638,738	23,473,236
Displacement tonnage				70,065	40,519	110,584	70,065	40,519	110,584
Tolls	\$4,557,470	\$4,674,529	\$9,231,999	\$5,633,827	\$5,675,404	\$11,309,231	\$10,191,297	\$10,349,953	\$20,541,230
Cargo (long tons)	4,505,293	7,872,213	12,377,506	5,393,795	7,533,857	12,927,652	9,899,088	15,406,070	25,305,158

¹ Includes only tolls-paying vessels of 300 net tons and over (Panama Canal measurement) for vessels rated on net tonnage, or of 500 tons displacement for vessels rated on displacement tonnage.

² Vessels certificated for more than 12 passengers.

³ Vessels certificated for 12 passengers or less, or without passenger accommodations.

⁴ Includes 1 dredge with displacement tonnage of 3,911, paying tolls of \$1,955.50.

TABLE NO. 33.—*Laden and ballast traffic by nationality of vessel, fiscal year 1949*

	Laden			Ballast		
	Number of transits	Panama Canal net tonnage	Tolls	Number of transits	Panama Canal net tonnage	Tolls
Argentine.....	1	5, 412	\$4, 870. 80	1	5, 380	\$3, 873. 60
Brazilian.....				2	1, 314	946. 08
British.....	800	4, 773, 908	4, 296, 517. 20	104	515, 307	371, 021. 04
Chilean.....	61	329, 454	296, 508. 60	3	5, 739	4, 132. 08
Chinese.....	14	71, 377	64, 239. 30	2	4, 142	2, 982. 24
Colombian.....	74	105, 864	95, 277. 60	1	898	646. 56
Danish.....	119	565, 187	508, 668. 30	4	15, 920	11, 462. 40
Ecuadorian.....	36	79, 752	71, 776. 80	2	1, 906	1, 372. 32
Egyptian.....	1	4, 495	4, 045. 50			
Finnish.....	1	5, 209	4, 688. 10			
French.....	94	464, 491	418, 041. 90	5	23, 662	17, 036. 64
Greek.....	80	416, 306	374, 675. 40	12	61, 458	44, 249. 76
Honduran.....	238	511, 585	460, 426. 50	86	225, 561	162, 404. 92
Icelandic.....				1	4, 877	3, 511. 44
Italian.....	33	186, 462	167, 815. 80	1	5, 231	3, 766. 32
Mexican.....	13	66, 709	60, 038. 10	14	71, 008	51, 125. 76
Netherland.....	118	353, 182	317, 863. 80	3	13, 842	9, 966. 24
Norwegian.....	291	1, 460, 408	1, 314, 367. 20	116	535, 635	385, 657. 20
Panamanian.....	126	538, 642	484, 777. 80	56	238, 242	171, 533. 24
Paraguayan.....	4	1, 510	1, 359. 00			
Peruvian.....	24	81, 056	72, 950. 40	4	10, 548	7, 594. 56
Philippine.....	23	109, 382	98, 443. 80			
Portuguese.....	5	25, 556	23, 000. 40	6	29, 699	21, 383. 28
Soviet.....	2	10, 444	9, 399. 60			
Spanish.....	15	57, 618	51, 856. 20	16	61, 432	44, 231. 04
Swedish.....	149	698, 294	628, 464. 60	15	53, 728	38, 684. 16
Swiss.....	3	17, 112	15, 400. 80			
United States.....	1, 596	8, 921, 867	8, 029, 680. 30	374	1, 669, 887	1, 202, 318. 64
Uruguayan.....	1	2, 598	2, 338. 20			
Venezuelan.....	21	53, 940	48, 546. 00			
Totals:						
1949.....	3, 943	19, 917, 820	17, 926, 038. 00	828	3, 555, 416	2, 559, 899. 52
1948.....	3, 818	19, 099, 490	17, 189, 541. 00	846	3, 802, 574	2, 737, 853. 28
1947.....	3, 442	16, 600, 450	14, 940, 405. 00	804	3, 632, 593	2, 615, 466. 96

NOTE.—The above includes only tolls-paying vessels of 300 net tons or over, Panama Canal measurement.

TABLE No. 34.—*Frequency of transits 1 of vessels through the Canal, fiscal year 1949*

[Number of vessels making indicated number of transits]

Nationality	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30	32	33	34	36	Total ships	Total transits	Transits per ship	
Argentine	2																																2	2	1.00		
Brazilian	3																																3	3	1.00		
British	180	120	49	45	10	11	2	1	1			1				1																	420	915	2.18		
Chilean	1	1	1	2		1						4																					8	64	8.00		
Chinese	9	2																															13	21	1.62		
Colombian																																	6	75	12.50		
Danish	9	5	6	5	3			1	1	2	2					1	1																33	123	3.73		
Ecuadorian																																	3	38	12.66		
Egyptian	1									1																							1	1	1.00		
Finnish	1																																1	1	1.00		
French	23	9	2	7	4	1																											46	101	2.20		
Greek	36	14	2	2	2	1		1																									56	92	1.64		
Honduran	5	9		9		3	2	1	1	3	1					1																	42	323	7.69		
Icelandic																																	1	1	1.00		
Italian	11	4	1			1																											18	34	1.88		
Mexican		2	1	1		1																											6	27	4.50		
Netherlands		7	6	1	5	2	4	1	1	1																							29	122	4.21		
Norwegian	30	31	12	11	6	6	3	4		1							1																108	407	3.77		
Panamanian	52	24	4	3		2	2			1																								89	183	2.05	
Paraguayan	4																																4	4	1.00		
Peruvian	4	8				1																											14	30	2.14		
Philippine	1					1																											6	23	3.83		
Portuguese		2	1	1																													4	11	2.73		
Soviet	2																																2	2	1.00		
Spanish	11	6	2	1		1																											11	31	2.82		
Swedish				7	2	1	3	1		1	1																						42	164	3.90		
Swiss																																	3	3	3.00		
United States	141	104	50	46	33	31	13	4		2	1	6	2	3	3	9	3	3	2	1	2	2											469	1,970	4.20		
Uruguayan	1																																1	1	1.00		
Venezuelan																																	3	21	7.00		
Total, 1949	536	356	137	150	62	65	29	14	4	12	6	7	6	7	4	11	6	4	4	2	3	3	1	3	2	2	2	2	1			1	1	1	1,442	4,793	3.32
Total, 1948	704	429	162	118	60	56	25	29	16	13	9	8	4	2	6	4	5	3			1	3	2											1,603	4,678	2.81	
Total, 1947	931	430	147	106	42	43	26	11	7	11	1	3	3	6	3	2		2		1	1	1	3											1,790	4,260	2.38	

¹ Includes only toll-paying vessels of 300 net tons and over, Panama Canal measurement, or of 500 displacement tons or over on vessels rated on displacement basis (dredges, warships, etc.).

TABLE No. 35.—*Segregation of transits¹ by registered gross tonnage of vessels, fiscal year 1949*

Nationality	Under 2,000	2,000 to 3,999	4,000 to 5,999	6,000 to 7,999	8,000 to 9,999	10,000 to 11,999	12,000 to 13,999	14,000 to 15,999	16,000 to 17,999	Total ²	Registered gross ton- nage	Average gross ton- nage per vessel	
												1949	1948
Argentina.....				2						2	13,570	6,835	4,375
Belgian.....													7,141
Brazilian.....	2									2	2,270	1,135	2,733
British.....	7	3	150	490	135	75	18	10	16	904	6,980,178	7,721	7,538
Chilean.....		11	1	1	51					64	490,500	7,664	7,303
Chinese.....		3		13						16	107,400	6,713	2,198
Colombian.....	52	18	4	1						75	170,118	2,268	1,818
Costa Rican.....													1,068
Cuban.....													3,805
Danish.....	12	7	70	15	19					123	655,607	5,330	3,053
Ecuadorian.....	10	28								38	117,740	3,098	3,073
Egyptian.....				1							6,240	6,240	
Finnish.....				1						1	7,303	7,303	3,788
French.....		6	12	77	4					99	669,813	6,766	6,888
Greek.....			15	77						92	631,025	6,859	7,057
Honduran.....	86	117	83	38						324	1,196,341	3,692	2,746
Icelandic.....			1							1	4,724	4,724	3,805
Italian.....			1	19	14					34	262,563	7,722	8,163
Mexican.....				27						27	193,245	7,157	3,796
Netherlands.....	54	23	14	15	11	4				121	422,401	3,491	2,850
Nicaraguan.....													2,798
Norwegian.....	4	84	144	107	46	22				407	2,384,224	5,858	6,250
Palestinian.....									1	182	1,062,253	5,837	5,318
Panamanian.....	30	40	12	63	8	28				4	2,539	635	4,400
Paraguayan.....	3	15	2	8						28	128,213	4,579	5,418
Peruvian.....			19	4						23	126,837	5,515	7,612
Philippine.....													
Polish.....										11	61,641	5,604	5,127
Portuguese.....			11							2	10,766	5,383	4,248
Soviet.....			2							31	162,968	5,257	5,010
Spanish.....		6	16	9						164	1,032,716	6,297	6,811
Swedish.....		32	36	78	3			15		3	15,426	5,142	5,155
Swiss.....		3											
United States.....	10	85	148	974	629	123	1			1,970	14,710,196	7,467	7,535
Uruguayan.....										1	3,805	3,805	
Venezuelan.....										21	93,685	4,461	2,414
Total.....	274	491	753	2,020	920	252	19	25	17	4,771	31,726,407	6,650	6,654
Percent of total.....	5.7	10.3	15.8	42.3	19.3	5.3	0.4	0.5	0.4	100.0			

¹ Includes only tolls-paying vessels of 300 net tons or over, Panama Canal measurement.² 22 vessels rated on displacement tonnage (1 Brazilian, 11 British, 5 Chinese, 2 French, 1 Netherlands, and 2 Peruvian) are not included.

TABLE No. 36.—*Principal commodities shipped through Canal*

[All figures in long tons of 2,240 pounds]

Commodity	Fiscal year		
	1949	1948	1947
ATLANTIC TO PACIFIC			
Mineral oils.....	2, 186, 777	1, 762, 691	2, 200, 916
Coal and coke.....	1, 173, 893	194, 638	91, 503
Manufactures of iron and steel.....	1, 163, 779	1, 229, 707	1, 082, 272
Ammonium compounds.....	448, 652	507, 720	81, 364
Paper and paper products.....	393, 757	429, 023	359, 050
Metals, various.....	319, 386	102, 058	80, 969
Flour.....	307, 741	229, 904	200, 305
Sulphur.....	293, 626	295, 267	309, 586
Cotton, raw.....	247, 931	196, 252	273, 721
Machinery.....	226, 429	229, 223	170, 155
Tinplate.....	218, 300	171, 636	163, 820
Chemicals, unclassified.....	125, 482	123, 526	99, 833
Automobiles.....	120, 899	137, 749	135, 530
Canned food products.....	116, 301	105, 723	121, 988
Coffee.....	93, 912	93, 585	74, 174
Cement.....	84, 538	113, 031	201, 460
Wheat.....	75, 262	75, 831	80, 831
Asphalt.....	73, 408	81, 672	68, 301
Grains, unclassified.....	69, 726	7, 006	12, 481
Rice.....	69, 655	60, 053	133, 905
Ores, various.....	65, 423	48, 693	62, 442
Automobile parts and accessories.....	61, 840	78, 158	72, 952
Sugar.....	60, 228	70, 750	79, 793
Salt.....	58, 326	117, 711	58, 212
Woodpulp.....	57, 676	87, 849	45, 249
Agricultural implements.....	55, 589	45, 102	34, 939
Textiles.....	55, 487	63, 486	58, 230
Fertilizers, unclassified.....	54, 064	37, 578	26, 697
Soda and sodium compounds.....	42, 759	52, 785	31, 809
Liquors and wines.....	42, 209	41, 996	37, 336
Lumber.....	41, 503	47, 480	30, 533
Phosphates.....	39, 896	42, 341	156, 212
Electrical apparatus.....	38, 653	56, 524	38, 954
Tobacco.....	36, 834	52, 982	64, 894
Creosote.....	34, 907	54, 361	33, 381
Floor coverings.....	34, 705	36, 428	26, 506
Glass and glassware.....	32, 031	36, 023	19, 537
Paints and varnishes.....	30, 591	30, 754	28, 660
Oilseeds.....	29, 105	8, 461	5, 319
Slag.....	26, 569	7, 300	12, 328
Groceries, miscellaneous.....	24, 504	29, 147	35, 580
Wax, paraffin.....	23, 581	17, 405	16, 623
Nitrate.....	23, 532	54, 829	113, 035
Rosin.....	19, 699	19, 387	20, 299
Oilseed cake and meal.....	13, 996	36, 929	5, 483
Drugs and medicines.....	12, 781	17, 118	21, 097
Railroad material.....	9, 253	10, 192	32, 247
All others.....	1, 063, 893	1, 331, 076	1, 184, 309
Total.....	9, 899, 088	8, 679, 140	8, 294, 820

See footnotes at end of table.

TABLE No. 36.—*Principal commodities shipped through Canal*—Continued

[All figures in long tons of 2,240 pounds]

Commodity	Fiscal year		
	1949	1948	1947
PACIFIC TO ATLANTIC			
Ores, various.....	4,028,279	² 2,803,577	2,184,650
Lumber.....	2,005,669	3,279,892	2,340,696
Nitrate.....	1,445,982	1,491,940	1,294,226
Wheat.....	1,127,581	1,112,359	1,489,622
Canned food products.....	733,378	649,059	713,040
Sugar.....	668,994	168,277	142,728
Metals, various.....	655,312	613,130	630,047
Food products in refrigeration ¹	601,617	570,812	514,026
Bananas.....	480,542	262,601	331,266
Scrap metal.....	334,615	122,656	48,522
Mineral oils.....	314,527	773,817	236,895
Coffee.....	261,870	243,662	218,924
Wool.....	228,302	235,445	284,633
Copra.....	216,854	224,523	301,187
Fruit, dried.....	144,091	112,468	116,625
Iron and steel manufactures.....	143,409	² 269,547	323,476
Wood pulp.....	137,998	127,867	60,027
Flour.....	133,891	105,692	111,060
Cotton, raw.....	123,025	61,959	77,673
Oils, vegetable.....	89,386	95,543	63,366
Beans, edible.....	85,910	121,406	49,083
Fruit, fresh (excluding bananas).....	81,724	77,734	81,861
Rice.....	78,240	146,759	144,723
Rubber, crude.....	69,785	65,151	39,054
Barley.....	69,621	68,096	16,256
Borax.....	61,546	54,478	34,153
Paper and paper products.....	56,908	47,395	34,647
Molasses.....	50,339	59,009	57,690
Skins and hides.....	43,095	47,404	51,596
Peas, dry.....	40,745	34,605	26,042
Tallow.....	36,275	23,012	22,786
Oilseed cake and meal.....	34,516	12,260	4,996
Coconuts.....	34,183	32,080	15,277
Ammonium compounds.....	33,146	36,361	26,686
Seeds (except oilseeds).....	32,928	23,263	17,370
Grains, miscellaneous and unclassified.....	32,616	71,527	31,380
Chemicals, unclassified.....	30,226	40,419	24,956
Oats.....	30,087	20,258	89,202
Oilseeds.....	25,740	19,754	5,940
Machinery.....	25,012	51,948	39,952
Cocoa and cacao beans.....	19,079	18,942	18,187
Wines.....	18,432	7,474	13,390
Milk, powdered.....	18,007	11,548	14,473
Hemp, unmanufactured.....	17,963	35,555	41,328
Sand.....	17,902	15,751	26,168
Soda and sodium compounds.....	16,905	34,139	3,141
Groceries, miscellaneous.....	16,220	17,392	33,301
Porcelain ware.....	15,327	4,060	681
Asphalt.....	5,271	34,324	35,509
Coal and coke.....	2,225	337,880	413,480
All other.....	430,775	543,712	479,701
Total.....	15,406,070	15,438,522	13,375,698

¹ Does not include fresh fruit.² Corrected figure.

TABLE No. 37.—Origin and destination of cargo through the Panama Canal from Atlantic to Pacific during fiscal year 1949, segregated by countries in principal trade areas—Continued

[In tons]

From—	To Australasia			To Asia					Grand total	Percent of total Pacific-bound cargo
	Australia	New Zealand	Australasia (other) ³	Total	Philippine Islands	China	Japan	East Indies	Asia (other) ³	Total
East coast North America:										
United States:										
North Atlantic ports.....	210,468	44,320	90,019	344,807	294,905	179,137	1,143,586	48,399	99,948	1,765,975
South Atlantic ports.....	1,289	1,190	1,406	3,885	8,612	4,221	23,497	38,671	1,412	38,343
Gulf ports.....	293,539	115,112	2,135	410,806	114,034	179,793	926,357	43,845	32,272	1,296,281
Total, United States.....	505,316	160,622	93,560	759,498	417,551	363,151	2,063,350	92,915	133,632	3,100,599
Central America/Mexico.....	59,205	51,952	—	111,157	1,468	15,413	6,583	2,259	7,900	33,683
Cristobal, Canal Zone ¹	—	330	—	330	—	—	2,525	—	8,750	17,275
West Indies.....	58,763	14,279	11,704	84,746	44	17,070	29,415	1,105	—	47,670
Total, North America.....	623,284	227,183	105,204	955,731	419,063	395,634	2,132,243	96,279	150,342	3,193,561
Europe:										
British Isles.....	48,040	395,390	6,516	449,946	—	5,628	—	2,985	3,746	12,359
Belgium.....	2,561	50,325	—	52,886	—	—	—	—	—	1.9
Denmark.....	—	—	—	—	—	—	—	—	—	8,495
France.....	—	500	10,624	11,124	—	—	8,733	—	—	8,733
Germany.....	—	833	—	833	—	—	—	—	—	36,300
Italy.....	—	—	—	—	348	310	881	111	25	4,372
Netherlands.....	77	453	—	530	—	—	—	—	—	12,228
Norway.....	8,127	2,943	—	11,070	—	—	—	—	—	1,625
Spain and Portugal.....	—	77	—	77	—	—	—	—	—	19,193
Sweden.....	14,480	10,031	—	24,511	—	—	—	—	—	58,912
Europe, other ²	1,616	1,281	563	3,460	—	—	—	—	—	1,969
Total, Europe.....	74,901	461,833	17,703	554,437	348	5,938	9,564	3,066	3,771	22,717
East coast South America:										
Argentina.....	—	—	—	—	—	—	—	—	—	—
Brazil.....	—	—	—	—	15	—	9,169	—	—	9,169
Colombia.....	—	—	—	—	—	—	—	—	—	15
Venezuela.....	30,415	—	—	30,415	—	—	—	—	—	41,943
South America, other ³	—	—	—	—	—	—	—	—	—	185,677
Total, South America.....	30,415	—	—	30,415	15	—	9,169	—	—	19,438
Asia.....	—	—	—	—	—	—	—	—	—	9,184
Africa.....	—	—	—	—	—	—	—	52	—	23,291
Grand total.....	728,600	689,016	125,485	1,543,101	419,426	401,572	2,150,976	99,427	154,113	3,225,514
Percent of Pacific-bound cargo.....	7.4	6.9	1.3	15.6	4.2	4.1	21.7	1.0	1.6	32.6
										100.

¹ Includes both local and transhipped cargo.² Cargo not routed to permit segregation between definite countries.³ Also includes cargo not routed to permit segregation between definite countries.⁴ Via Strait of Magellan.

TABLE NO. 38.—Origin and destination of cargo through Panama Canal from Pacific to Atlantic during fiscal year 1949, segregated by countries in principal trade areas

[In tons]

From—	To United States				To other North America				Total, North America	To Europe		
	North Atlantic ports	South Atlantic ports	Gulf ports	Total	Canada	Central America/ Mexico	Cristobal, Canal Zone 1	West Indies		British Isles	Belgium	Denmark
West coast North America:												
United States	1,536,982	7,320	96,855	1,641,157	11,475	1,040	9,452	177,974	1,841,098	150,211	85,815	12,184
Canada	166,949	3,017	1,914	171,880	6,013	8,950	711	11,218	192,759	1,608,271	33,598	4,248
Baltica, Canal Zone 1	267		2,093	2,360					8,373			
Central America/Mexico	216,766	3,963	108,286	389,015	1,151	206	59,121	9,042	458,535	1,587	2,953	308
Hawaiian Islands	320,820	3,638	69,023	393,481	8,260	256			402,007			
Total, North America	2,241,784	17,938	338,171	2,597,893	26,899	10,462	69,284	198,234	2,902,772	1,700,069	122,366	16,740
West coast South America:												
Chile	3,380,837	256,031	279,044	3,915,912		12,204	6,640	49,946	3,984,702	157,140	67,388	50,346
Colombia	121,923	10,314	50,229	182,476			4,011	74	186,561	102	17	
Ecuador	70,081	21,373	42,367	133,821			13,309	1,041	148,171	47	2,099	
Peru	128,178	611	20,154	148,943		40	1,804	56	150,843	218,558	50,550	13,872
South America 2	3,661		2,504	6,165			962		7,127	1,615	4,327	
Total, South America	3,704,680	288,329	394,308	4,387,317		12,244	26,726	51,117	4,477,404	377,462	124,981	64,218
Australasia:												
Australia	137,118			137,118	82,508	30	193	15,590	235,439	229,833	2,726	
New Zealand	25,743			25,743	7,050		99	3,326	36,218	816,336	4,920	
Australasia, other 3	93,041			93,041				394	93,435	91,460		
Total, Australasia	255,902			255,902	89,558	30	292	19,310	365,092	1,137,629	7,646	
Asia:												
Philippine Islands	759,593	2,139	93,143	854,875			631		855,506			
China	94,021		10,638	104,659			1,716	20	106,395			
Japan	183,771		10,790	194,561	29,020		1,336	9	224,926			
East Indies	37,542	9,467	467,215	514,224			30		514,274			
Asia, other 3	13,227		7,108	20,335					20,335	11,551		
Total, Asia	1,088,154	11,606	588,894	1,688,654	29,020		3,733	29	1,721,436	11,551		
Grand total	7,290,520	317,873	1,321,373	8,929,766	145,477	22,736	100,035	268,690	9,466,704	3,286,711	254,993	80,958
Percent of Atlantic-bound cargo	47.3	2.1	8.6	58.0	1.0	0.1	0.6	1.7	61.4	21.3	1.7	0.5

TABLE No. 38.—Origin and destination of cargo through Panama Canal from Pacific to Atlantic during fiscal year 1949, segregated by countries in principal trade areas—Continued

[In tons]

From—	To Europe—Continued							To South America			
	France	Germany	Italy	Nether-lands	Norway	Spain and Portugal	Sweden	Europe (other) ³	Total	Argentina	Brazil
West coast North America:											
United States.....	112,548	184,862	78,250	78,410	12,308	3,627	14,507	61,769	794,491	7,552	15,024
Canada.....	44,415	22,275	31,154	14,801	124	17	296	28,447	1,787,646	312	5,500
Bahboa, Canal Zone ¹											
Central America/Mexico.....	9,149		5,981	26,185			1,198	6,891	51,299		
Hawaiian Islands.....									2,953		
Total, North America.....	166,112	207,137	115,385	119,396	12,432	3,644	16,001	97,107	2,636,380	7,864	20,524
West coast South America:											
Chile.....	194,767	17,158	27,437	52,416	5,803	140,308	36,705	31,887	781,355		
Colombia.....			171	204		1	347		842		
Ecuador.....	535	23	5,146	1,521	603	129	120	332	11,155		
Peru.....	17,892	1,226	937	17,353	39	5	514	2,112	323,058		
South America ²	4,327						3,479	36	13,784		
Total, South America.....	217,521	18,407	33,691	71,494	6,445	140,443	41,165	34,367	1,130,194		
Australasia:											
Australia.....	79		42						232,680		
New Zealand.....		1,111	1,286					2,325	825,978		
Australasia, other ³	48,814								140,274		
Total, Australasia.....	48,893	1,111	1,328					2,325	1,198,932		
Asia:											
Philippine Islands.....											
China.....											
Japan.....											
East Indies.....									11,551		
Asia, other ³											
Total, Asia.....									11,551		
Grand total.....	432,526	226,655	150,404	190,890	18,877	144,087	57,106	133,799	4,977,066	7,861	20,524
Percent of Atlantic-bound cargo.....	2.8	1.5	1.0	1.2	0.1	0.9	0.4	0.9	32.3		0.1

From—	To South America—Continued				Asia	To Africa				Grand total	Percent of total Atlantic-bound cargo
	Colombia	Venezuela	South America (other) ³	Total		British South Africa	Egypt	Africa (other) ³	Total		
West coast North America:											
United States.....	8,626	41,280	10,588	83,170	3,423	76,301	9,726	31,776	117,803	2,839,985	18.4
Canada.....	1,581	4,936	1,112	13,441	13,047	189,950	53,699	47,950	291,599	2,298,492	15.0
Balboa, Canal Zone ¹					1,000			2,770	2,770	8,373	3.4
Central America/Mexico.....	16	3,780	794	4,590						518,194	2.6
Hawaiian Islands.....										404,960	
Total, North America.....	10,223	50,096	12,494	101,201	17,470	266,251	63,425	82,496	412,172	6,070,004	39.4
West coast South America:											
Chile.....	3	1,416		1,419			255,593	7,380	362,973	5,130,449	33.3
Colombia.....	20,478	6		20,484						207,887	1.3
Ecuador.....	22	4,815	1,053	5,890						165,216	1.1
Peru.....	78	13,908	5,666	19,652				4,931	4,931	498,484	3.2
South America ²		2,976		2,976						23,887	0.2
Total, South America.....	20,581	23,121	6,719	50,421			355,593	12,311	367,904	6,025,923	39.1
Australasia:											
Australia.....											
New Zealand.....					2,302					470,421	3.1
Australasia, other ³										862,196	5.6
Total, Australasia.....					2,302					233,709	1.5
Asia:										1,566,326	10.2
Philippine Islands.....											
China.....	8,200	2,630		10,830						866,336	5.6
Japan.....										106,395	0.7
East Indies.....										224,926	1.5
Asia, other ²										514,274	3.3
Total, Asia.....	8,200	2,630		10,830						31,886	0.2
Grand total.....	39,004	75,847	19,213	162,452	19,772	266,251	419,018	94,807	780,076	15,406,070	100.0
Percent of total Atlantic-bound cargo.....	0.3	0.6	0.1	1.1	0.1	1.7	2.8	0.6	5.1	100.0	

¹ Includes both local and transshipped cargo.² Cargo not routed to permit segregation between definite countries.³ Also includes cargo not routed to permit segregation between definite countries.

TABLE NO. 39.—*Cargo shipments by trade route, Atlantic to Pacific*

[Tons of 2,240 pounds]

	Fiscal year		
	1949	1948	1947
East coast United States to—			
West coast United States.....	1,449,561	1,719,005	1,466,373
West coast Canada.....	37,350	37,639	36,843
West coast Central America/Mexico.....	62,644	54,752	36,977
West coast South America.....	860,376	886,235	774,499
Hawaiian Islands.....	267,658	236,797	269,953
Australasia.....	759,498	594,477	688,724
Asia.....	3,100,599	2,212,510	2,202,040
Balboa, Canal Zone.....	25,905	22,574	81,657
Total from east coast United States.....	6,563,591	5,763,989	5,557,066
East coast Canada to—			
West coast United States.....	35,670	33,774	54,445
West coast Canada.....	2,900		
Australasia.....	111,157	167,436	234,423
Asia.....	33,683	42,911	28,030
Other territories.....	5,096		
Total from east coast Canada.....	188,506	244,121	316,898
East coast Central America/Mexico to—			
West coast Central America/Mexico.....	162,365	31,892	27,800
Asia.....	11,275	20,089	
Other territories.....	4,825	712	641
Total from east coast Central America/Mexico.....	178,465	52,693	28,441
East coast South America to—			
West coast United States.....	275,078	138,845	106,571
West coast Canada.....	27,972	38,873	27,307
West coast South America.....	65,208	47,622	30,073
Other territories.....	39,624	66	9,279
Total from east coast South America.....	407,882	225,406	173,230
Cristobal, Canal Zone, to—			
West coast Central America/Mexico.....	80,189	88,446	90,562
West coast South America.....	18,153	17,255	22,851
Other territories.....	7,604	6,792	5,017
Total from Cristobal, Canal Zone.....	105,946	112,493	118,430
West Indies to—			
West coast United States.....	6,090	9,104	31,378
West coast Central America/Mexico.....	172,237	105,047	120,559
West coast South America.....	752,264	829,496	858,168
Balboa, Canal Zone.....	184,152	190,700	242,938
Australasia.....	84,746	84,591	72,188
Asia.....	47,634	84,239	47,429
Hawaiian Islands.....			43,719
West coast Canada.....	8,903	37,430	24,052
Total from West Indies.....	1,256,026	1,340,607	1,440,431
Europe to—			
West coast United States.....	233,570	213,429	81,080
West coast Canada.....	75,795	47,681	47,568
West coast Central America/Mexico.....	38,986	17,720	23,014
West coast South America.....	233,662	195,980	216,210
Australasia.....	554,437	413,637	239,835
Balboa, Canal Zone.....	10	4,563	26,372
Other territories.....	22,833	15,350	16,821
Total from Europe.....	1,159,293	908,360	650,900
Asia and Africa to—			
Other territories.....	39,379	31,471	9,424
Total cargo, Atlantic to Pacific.....	9,899,088	8,679,140	8,294,820

TABLE NO. 40—*Cargo shipments by trade route, Pacific to Atlantic*

[Tons of 2,240 pounds]

	Fiscal year		
	1949	1948	1947
West coast United States to—			
East coast United States.....	1,641,157	2,118,799	1,463,429
East coast South America.....	83,170	216,724	150,700
Cristobal, Canal Zone.....	9,452	48,112	4,864
West Indies.....	177,974	334,964	171,886
Europe.....	794,491	1,953,195	1,841,143
Asia.....	3,423	21,766	7,811
Africa.....	117,803	188,831	100,554
Other territories.....	12,515	14,182	18,620
Total from west coast United States.....	2,839,985	4,896,573	3,759,007
West coast Canada to—			
East coast United States.....	171,880	83,397	25,025
West Indies.....	11,218	10,171	25,673
East coast South America.....	13,441	19,826	39,015
Europe.....	1,787,646	2,482,088	2,638,086
Asia.....	13,047	40,853	28,659
Africa.....	291,599	187,788	224,029
Other territories.....	9,661	271	861
Total from west coast Canada.....	2,298,492	2,824,394	2,981,348
West coast Central America/Mexico to—			
East coast United States.....	389,015	234,947	308,494
Cristobal, Canal Zone.....	59,121	55,229	71,737
Europe.....	51,299	42,427	28,063
West Indies.....	9,042	24,683	14,759
Other territories.....	9,717	3,620	5,745
Total from west coast Central America/Mexico.....	518,194	360,906	428,798
West coast South America to—			
East coast United States.....	4,387,317	3,416,518	2,700,861
East coast South America.....	50,421	34,075	43,483
Cristobal, Canal Zone.....	26,726	35,140	42,659
West Indies.....	51,117	90,191	86,456
Europe.....	1,130,194	1,905,466	1,097,688
Africa.....	367,904	336,779	263,406
Other territories.....	12,244	3,369	29,216
Total from west coast South America.....	6,025,923	5,011,538	4,263,769
Balboa, Canal Zone, to—			
Other territories.....	8,373	17,560	8,916
Hawaiian Islands to—			
East coast United States.....	393,481	228,177	201,603
East coast Canada.....	8,260	12,550	20,158
Europe.....	2,953	—	11,236
Other territories.....	266	111	5,248
Total from Hawaiian Islands.....	404,960	240,838	238,245
Australasia to—			
East coast United States.....	255,902	190,278	196,632
East coast Canada.....	89,558	36,406	65,732
Europe.....	1,198,932	1,044,295	907,664
Other territories.....	21,934	10,272	3,683
Total from Australasia.....	1,566,326	1,281,251	1,173,711
Asia to—			
East coast United States.....	1,688,654	791,730	512,361
East coast Canada.....	29,030	4,112	33
East coast South America.....	10,830	7,632	4,862
Europe.....	11,551	—	2,922
Other territories.....	3,762	1,988	1,726
Total from Asia.....	1,743,817	805,462	521,904
Total cargo, Pacific to Atlantic.....	15,406,070	15,483,522	13,375,698

TABLE NO. 41.—*Important commodity shipments over principal trade routes, Atlantic to Pacific*

[Tons of 2,240 pounds]

	Fiscal year		
	1949	1948	1947
East coast United States to west coast United States:			
Canned food products.....	30,887	46,441	27,866
Chemicals, unclassified.....	20,928	18,053	16,811
Electrical apparatus.....	9,275	17,727	13,585
Floor coverings.....	27,783	26,117	20,691
Iron and steel manufactures.....	630,704	761,844	633,785
Lumber.....	6,930	16,791	9,115
Machinery.....	13,688	13,886	19,895
Mineral oils:			
Lubricating.....	120,189	122,921	95,097
Other and unclassified.....	86,828	6,975	99,819
Paints.....	8,187	11,217	13,781
Paper and paper products.....	83,129	104,855	61,406
Phosphates.....	1,727	7,320	17,701
Sulphur.....	69,566	106,641	66,607
Tinplate.....	12,549	11,951	9,846
Wood pulp.....	17,843	37,588	7,396
All other and unclassified.....	309,348	408,678	352,972
Total.....	1,449,561	1,719,005	1,466,373
East coast United States to west coast Canada:			
Sulphur.....	24,190	25,400	30,005
All other and unclassified.....	13,160	12,239	6,838
Total.....	37,350	37,639	36,843
East coast United States to west coast Central America / Mexico:			
Chemicals, unclassified.....	12,902	16,203	8,216
Iron and steel manufactures.....	1,797	11,061	8,799
Coal.....	14,161	7,947	3,820
Mineral oils.....	15,663	3,698	3,669
All other and unclassified.....	18,121	15,843	12,473
Total.....	62,644	54,752	36,977
East coast United States to west coast South America:			
Agricultural implements.....	21,067	11,320	13,088
Automobiles and parts.....	37,795	45,298	65,359
Bricks and tile.....	13,898	13,498	3,294
Canned food products.....	10,637	10,808	20,153
Cement.....	12,861	13,843	48,441
Chemicals, unclassified.....	23,102	21,933	15,774
Coal.....	4,336	144,674	52,198
Cotton, raw.....	18,385	631	326
Flour.....	33,317	19,028	32,379
Iron and steel manufactures.....	176,070	150,763	168,541
Mineral oils:			
Lubricating oils and greases.....	29,281	25,304	25,350
Other.....	40,733	16,825	1,960
Machinery.....	90,340	74,387	60,763
Paper and paper products.....	18,397	18,723	21,008
Railroad and material.....	1,897	1,934	11,589
Tinplate.....	13,241	14,460	8,394
Wheat.....	70,176	46,216	13,506
All other and unclassified.....	244,843	256,590	212,376
Total.....	860,376	886,235	774,499
East coast United States to Hawaiian Islands:			
Automobiles and parts.....	15,109	13,387	8,046
Iron and steel manufactures.....	23,931	20,006	12,808
Mineral oils.....	16,057	87,109	131,496
Tinplate.....	79,319	35,054	41,718
All other and unclassified.....	133,242	81,241	75,885
Total.....	267,658	236,797	269,953

TABLE NO. 41.—*Important commodity shipments over principal trade routes, Atlantic to Pacific—Continued*

[Tons of 2,240 pounds]

	Fiscal year		
	1949	1948	1947
East coast United States to Australasia:			
Agricultural implements.....	17,814	20,845	13,368
Automobiles and parts.....	26,436	37,716	45,649
Chemicals, unclassified.....	6,698	10,204	7,059
Coal.....	82,837	2,079	-----
Iron and steel manufactures.....	17,076	11,467	6,314
Machinery.....	17,693	20,870	7,542
Mineral oils:			
Lubricating oil.....	91,207	103,960	92,710
Other and unclassified.....	149,092	20,032	58,863
Paper and paper products.....	3,941	17,774	4,782
Phosphates.....	22	106	62,587
Rosin.....	5,749	6,979	10,863
Sulphur.....	192,435	141,802	193,496
Tinplate.....	54,450	60,565	74,540
Tobacco and manufactures.....	12,099	16,188	9,103
All other and unclassified.....	81,949	123,890	101,848
Total.....	759,498	594,477	688,724
East coast United States to Asia:			
Ammonium compounds.....	432,547	503,756	75,568
Automobiles and parts.....	34,589	34,838	35,792
Canned food products.....	45,650	27,534	58,399
Cement.....	6,371	41,725	12,453
Chemicals, unclassified.....	15,556	26,626	28,729
Coal.....	1,025,745	11,706	27,290
Cotton, raw.....	225,265	187,289	265,523
Fertilizers.....	34,355	8,392	12,455
Flour.....	262,461	202,243	159,205
Iron and steel manufactures.....	99,642	158,289	175,882
Machinery.....	37,563	63,998	50,940
Mineral oils:			
Lubricating oils and greases.....	91,360	57,033	73,057
Other and unclassified.....	46,364	90,334	219,599
Nitrate.....	9,321	45,496	105,652
Oil seed cake and meal.....	10,112	33,713	4,785
Paper and paper products.....	31,212	30,773	43,871
Phosphates.....	17,686	5,298	50,094
Railroad material.....	1,837	5,535	14,267
Rice.....	58,168	57,212	133,132
Soy beans.....	26,447	17,015	537
Soy bean flour.....	47,794	109,757	-----
Sulphur.....	5,990	19,909	19,316
Textiles.....	18,927	21,050	18,585
Tinplate.....	27,986	25,292	16,058
Tobacco.....	20,815	30,187	51,092
Wheat.....	4,666	27,919	67,211
All other and unclassified.....	462,170	366,591	482,568
Total.....	3,100,599	2,212,510	2,202,040
East coast United States to Balboa, Canal Zone:			
Cement.....	86	2,740	36,136
Mineral oils.....	19,261	13,529	42,317
All other and unclassified.....	6,558	6,305	3,204
Total.....	25,905	22,574	81,657
East coast Canada to west coast United States:			
Copper and lead concentrates.....	30,704	24,387	54,149
All other and unclassified.....	4,966	9,387	296
Total.....	35,670	33,774	54,445
East coast Canada to west coast Canada (no single outstanding commodity in this trade).			
East coast Canada to Australasia:			
Automobiles and parts.....	9,969	13,695	20,755
Paper and paper products.....	59,263	102,875	160,697
All other and unclassified.....	41,925	50,866	52,971
Total.....	111,157	167,436	234,423

TABLE NO. 41.—*Important commodity shipments over principal trade routes.
Atlantic to Pacific—Continued*

[Tons of 2,240 pounds]

	Fiscal year		
	1949	1948	1947
East coast Canada to Asia:			
Iron and steel manufactures.....	10,808	21,426	-----
Paper and paper products.....	4,202	10,222	6,302
All other and unclassified.....	18,673	11,263	21,728
Total.....	33,683	42,911	28,030
East coast Central America/Mexico to west coast Central America/Mexico:			
Mineral oils.....	160,228	30,755	27,789
All other and unclassified.....	2,137	1,137	11
Total.....	162,365	31,892	27,800
East coast Central America/Mexico to Asia:			
Mineral oils.....	-----	13,869	-----
All other and unclassified.....	11,275	6,220	-----
Total.....	11,275	20,089	-----
East coast South America to west coast United States:			
Coffee.....	74,689	76,582	70,592
Mineral oils.....	128,690	-----	-----
All other and unclassified.....	71,699	62,263	35,979
Total.....	275,078	138,845	106,571
East coast South America to west coast Canada:			
Mineral oils.....	15,381	30,980	20,391
All other and unclassified.....	12,591	7,893	6,916
Total.....	27,972	38,873	27,307
East coast South America to west coast South America:			
Mineral oils.....	28,339	18,717	219
Lumber and mill products.....	12,259	4,929	1,375
All other and unclassified.....	24,610	23,976	28,479
Total.....	65,208	47,622	30,073
East coast South America to Asia (no single outstanding commodity in this trade).			
Cristobal, Canal Zone, to west coast Central America/Mexico:			
Iron and steel manufactures.....	9,717	10,120	2,798
All other and unclassified.....	70,472	78,326	87,764
Total.....	80,189	88,446	90,562
Cristobal, Canal Zone, to west coast South America (no single outstanding commodity in this trade).			
West Indies to west coast United States:			
Mineral oils.....	-----	-----	30,909
All other and unclassified.....	6,090	9,104	469
Total.....	6,090	9,104	31,378
West Indies to west coast Central America/Mexico:			
Mineral oils.....	151,569	98,086	112,440
All other and unclassified.....	20,668	6,961	8,119
Total.....	172,237	105,047	120,559
West Indies to west coast South America:			
Mineral oils.....	704,174	799,850	792,818
Sugar.....	44,310	26,472	54,614
All other and unclassified.....	3,780	3,174	10,736
Total.....	752,264	829,496	858,168
West Indies to Balboa, Canal Zone:			
Mineral oils.....	171,729	182,626	234,205
All other and unclassified.....	12,423	8,074	8,733
Total.....	184,152	190,700	242,938

TABLE NO. 41.—*Important commodity shipments over principal trade routes, Atlantic to Pacific—Continued*

[Tons of 2,240 pounds]

	Fiscal year		
	1949	1948	1947
West Indies to Australasia:			
Asphalt.....	5,105	49,090	26,912
Mineral oils.....	45,352	29,046	43,432
All other and unclassified.....	34,289	6,455	1,844
Total.....	84,746	84,591	72,188
West Indies to Asia:			
Mineral oils.....	15,965		40,426
Salt.....	23,415	69,804	7,003
All other and unclassified.....	8,254	14,435	
Total.....	47,634	84,239	47,429
West Indies to Hawaiian Islands:			
Mineral oils.....			43,719
Total.....			43,719
West Indies to west coast Canada:			
Salt.....	4,000	10,000	2,399
Sugar.....	4,000	27,406	20,986
All other and unclassified.....	903	24	667
Total.....	8,903	37,430	24,052
Europe to west coast United States:			
Creosote.....	22,007	37,992	23,764
Paper and paper products.....	125,704	89,344	16,657
Sand.....	9,112	11,776	5,032
Wood pulp.....	1,850	10,801	3,323
All other and unclassified.....	74,897	63,516	32,304
Total.....	233,570	213,429	81,080
Europe to west coast Canada:			
Cement.....	139	2,821	10,232
Creosote.....	12,660	16,313	9,526
Salt.....		52	11,200
Iron and steel manufactures.....	17,139	11,563	2,208
All other and unclassified.....	45,857	16,932	14,402
Total.....	75,795	47,681	47,568
Europe to west coast Central America/Mexico:			
Cement.....	28,546	13,197	21,015
All other and unclassified.....	10,440	4,523	1,999
Total.....	38,986	17,720	23,014
Europe to west coast South America:			
Cement.....	17,112	15,493	31,230
Chemicals, unclassified.....	15,398	7,795	4,066
Iron and steel manufactures.....	57,860	29,160	35,720
Machinery.....	16,011	11,763	8,056
Paper and paper products.....	21,414	21,119	33,402
Wood pulp.....	17,838	22,229	28,719
All other and unclassified.....	88,029	88,421	75,017
Total.....	233,662	195,980	216,210
Europe to Australasia:			
Automobiles and parts.....	35,532	50,534	17,845
Cement.....	11,156	6,082	6,549
Chemicals, unclassified.....	12,464	12,277	7,085
Coal.....	34,175	17,721	
Iron and steel manufactures.....	97,190	37,198	28,890
Machinery.....	29,846	33,131	13,313
Paper and paper products.....	21,737	22,906	5,036
Salt.....	25,006	23,790	25,321
Slag.....	26,469	7,300	12,120

TABLE NO. 41.—*Important commodity shipments over principal trade routes Atlantic to Pacific—Continued*

[Tons of 2,240 pounds]

	Fiscal year		
	1949	1948	1947
Europe to Australasia—Continued			
Textiles.....	20, 579	21, 418	22, 147
Tinplate.....	29, 197	24, 026	9, 368
Wood pulp.....	14, 647	22, 906	5, 036
All other and unclassified.....	196, 439	134, 348	87, 125
Total.....	554, 437	413, 637	239, 835
Europe to Balboa, Canal Zone:			
Cement.....		4, 335	24, 076
All other and unclassified.....	10	228	2, 296
Total.....	10	4, 563	26, 372

TABLE NO. 42.—*Important commodity shipments over principal trade routes, Pacific to Atlantic*

[Tons of 2,240 pounds]

	Fiscal year		
	1949	1948	1947
West coast United States to east coast United States:			
Canned food products.....	313, 041	303, 687	226, 313
Coconut oil.....	5, 009	21, 261	8, 982
Flour.....	1, 950	4, 118	20, 030
Fruit, dried.....	18, 653	19, 059	10, 046
Iron and steel manufactures.....	42, 628	55, 472	58, 031
Lumber.....	853, 780	983, 464	661, 170
Metal:			
Copper.....	623	2, 943	168
Lead.....	3, 099	4, 872	12, 567
Mineral oils.....	129, 195	350, 359	148, 980
Molasses.....	20, 375	42, 122	27, 708
Ore, magnesite.....	29, 575	56, 493	39, 077
Paper and paper products.....	28, 206	24, 797	16, 600
Rice.....	4, 000	8, 380	10, 537
Sugar.....	1, 015		13, 048
Wheat.....	176	607	17, 150
Wood pulp.....	41, 907	48, 972	22, 454
Wool.....	7, 920	16, 585	8, 189
All other and unclassified.....	140, 005	175, 608	162, 379
Total.....	1, 641, 157	2, 118, 799	1, 463, 429
West coast United States to east coast South America:			
Canned food products.....	10, 723	11, 757	2, 901
Coal.....		28, 439	
Iron and steel manufactures.....	7, 617	35, 517	60, 207
Lumber.....	5, 459	28, 124	15, 351
Machinery.....	5, 639	17, 892	6, 492
All other and unclassified.....	53, 732	94, 995	65, 749
Total.....	83, 170	216, 724	150, 700
West coast United States to Cristobal, Canal Zone:			
Mineral oils.....	218	30, 777	7
All other and unclassified.....	9, 234	17, 335	4, 857
Total.....	9, 452	48, 112	4, 864
West coast United States to West Indies:			
Beans.....	17, 630	13, 522	6, 621
Canned food products.....	49, 772	37, 674	38, 818
Iron and steel manufactures.....	3, 729	7, 999	11, 883
Mineral oils.....	17, 257	141, 273	162
Rice.....	47, 792	78, 831	71, 759
All other and unclassified.....	41, 794	55, 665	42, 643
Total.....	177, 974	334, 964	171, 886

TABLE NO. 42.—*Important commodity shipments over principal trade routes, Pacific to Atlantic—Continued*

[Tons of 2,240 pounds]

	Fiscal year		
	1949	1948	1947
West coast United States to Europe:			
Asphalt.....	21	27,732	32,170
Barley.....	19,207	14,373	7,134
Beans.....	5,204	34,077	581
Borax.....	57,933	49,932	30,552
Canned food products.....	53,621	72,777	201,144
Chemicals, unclassified.....	8,581	12,502	8,087
Coal.....		215,273	333,397
Coconut oil.....	3	8,592	17,114
Coke.....	2,225	68,637	77,203
Cotton, raw.....	81,238	17,662	17,047
Flour.....	69,555	4,950	24,222
Fruit, dried.....	107,329	81,118	93,638
Fruit, fresh.....	36,467	44,981	45,523
Grains, other than classified.....	60	11,905	2,541
Groceries.....	3,427	5,785	21,852
Iron and steel manufactures.....	70,077	142,969	173,968
Lumber.....	61,986	661,388	315,357
Machinery.....	6,211	8,930	11,535
Metals:			
Copper.....	24,442	21,137	18,100
Other and unclassified.....	17,152	82,910	78,054
Mineral oils.....	2,460	101,060	986
Peas, dry.....	13,410	10,667	13,078
Sugar.....		54	18,326
Wheat.....	306	63,690	172,477
Wood pulp.....	42,477	45,854	22,716
All other and unclassified.....	111,296	144,240	104,338
Total.....	794,491	1,953,195	1,841,143
West coast United States to Asia:			
Lumber.....	433	13,847	4,773
All other and unclassified.....	2,990	7,919	3,038
Total.....	3,423	21,766	7,811
West coast United States to Africa:			
Lumber.....	38,963	122,381	70,198
All other and unclassified.....	78,840	66,450	30,356
Total.....	117,803	188,831	100,554
West coast Canada to east coast United States:			
Iron ore.....	9,594	27,725	24,994
Lumber.....	150,278	55,516	
All other and unclassified.....	12,008	156	31
Total.....	171,880	83,397	25,025
West coast Canada to West Indies:			
Lumber.....	6,946	5,776	21,479
All other and unclassified.....	4,272	4,395	4,194
Total.....	11,218	10,171	25,673
West coast Canada to east coast South America: (No single outstanding commodity in this trade.)			
West Coast Canada to Europe:			
Ammonium compounds.....	23,046	11,645	24,857
Canned food products.....	5,404	35,433	51,806
Coal.....		17,993	
Fertilizers, unclassified.....	1,815	14,111	32,615
Flour.....	39,743	79,713	57,021
Fruit, fresh.....		2,730	23,992
Grains, other than oats and wheat.....	12,560	56,030	21,398
Lumber.....	626,059	1,174,789	978,113
Metals:			
Lead.....	4,349	11,237	7,676
Zinc.....	9,256	5,802	41,376
Oats.....	1,000	10,633	75,468
Wheat.....	975,119	1,001,264	1,281,101
Wood pulp.....	49,355	26,676	9,938
All other and unclassified.....	40,000	34,032	32,722
Total.....	1,787,646	2,482,088	2,638,086

TABLE NO. 42.—*Important commodity shipments over principal trade routes, Pacific to Atlantic—Continued*

[Tons of 2,240 pounds]

	Fiscal year		
	1949	1948	1947
West coast Canada to Asia:			
Lumber.....	1,905	37,429	26,159
Wheat.....	11,026		
All other and unclassified.....	116	3,424	2,500
Total.....	13,047	40,853	28,659
West coast Canada to Africa:			
Ammonium compounds.....	10,064	19,387	7,967
Fertilizers.....	6,696	12,447	4,264
Lumber.....	181,823	121,395	261,424
Wheat.....	66,080	18,877	
All other and unclassified.....	26,936	15,682	10,374
Total.....	291,599	187,788	224,029
West coast Central America/Mexico to east coast United States:			
Bananas.....	356,466	184,765	268,891
Ore, manganese.....	32,939	37,032	25,543
All other and unclassified.....	5,610	13,150	14,060
Total.....	389,015	234,947	308,494
West coast Central America/Mexico to Cristobal, Canal Zone:			
Coffee.....	45,710	35,762	45,746
Lumber.....	5,028	6,346	13,209
All other and unclassified.....	8,383	13,121	12,782
Total.....	59,121	55,229	71,737
West coast Central America/Mexico to Europe:			
Bananas.....	27,383	22,476	25,661
Coffee.....	421	2,975	1,860
All other and unclassified.....	23,495	16,976	542
Total.....	51,299	42,427	28,063
West coast Central America/Mexico to West Indies: (No single outstanding commodity in this trade.)			
West coast South America to east coast United States:			
Bananas.....	98,025	55,071	31,021
Beans, edible.....	8,703	17,295	2,603
Cocoa.....	13,366	14,648	11,692
Coffee.....	192,013	178,851	136,830
Cotton, raw.....	2,311	8,926	10,228
Metal:			
Copper.....	296,274	228,975	138,368
Lead.....	28,515	10,416	6,551
Tin.....	6,650	15,864	7,168
All other and unclassified.....	3,261	9,397	14,268
Molasses.....	9,097	14,650	14,908
Nitrate of soda.....	572,904	596,520	379,164
Ore:			
Copper.....	35,815	76,978	53,494
Iron.....	2,932,376	1,930,251	1,585,131
Manganese.....	10,476	33,487	113,584
Tin.....	50,834	48,870	35,218
Zinc.....	34,293	47,716	79,641
Other and unclassified.....	8,088	8,563	5,010
Sugar.....	32,981	50,240	25,221
Whale oil.....	6,506	15,446	
All other and unclassified.....	44,829	54,354	50,761
Total.....	4,387,317	3,416,518	2,700,861
West coast South America to east coast South America:			
Rice.....	7,371	16,466	12,618
Sugar.....	31,424	4,839	10,880
All other and unclassified.....	11,626	12,770	19,985
Total.....	50,421	34,075	43,483

1 Corrected figure.

TABLE No. 42.—*Important commodity shipments over principal trade routes, Pacific to Atlantic—Continued*

[Tons of 2,240 pounds]

	Fiscal year		
	1949	1948	1947
West coast South America to Cristobal, Canal Zone:			
Coffee.....	10,811	13,553	18,641
All other and unclassified.....	15,915	21,587	24,018
Total.....	26,726	35,140	42,659
West coast South America to West Indies:			
Beans.....	8,415	13,412	13,068
Mineral oils.....		11,019	
Nitrate of soda.....	28,988	33,382	34,764
Rice.....	910	22,506	25,710
All other and unclassified.....	12,804	9,872	12,914
Total.....	51,117	90,191	86,456
West coast South America to Europe:			
Barley.....	45,298	42,611	1,067
Beans, dried.....	30,503	23,571	12,683
Cotton, raw.....	36,597	31,534	37,566
Lumber.....	13,279	10,484	9,275
Metal:			
Copper.....	97,336	101,938	174,970
Lead.....	1,746	13,658	16,672
Mineral oils.....	142,748	125,107	68,010
Nitrate of soda.....	435,878	514,726	597,518
Ore:			
Tin.....	27,493	27,553	18,312
Zinc.....	62,534	39,649	15,376
Other and unclassified.....	23,105	29,586	16,673
Rice.....	3,993	1,193	11,878
Soda and sodium compounds.....	3,883	17,955	394
Sugar.....	69,271	36,882	40,925
All other and unclassified.....	136,530	79,019	76,369
Total.....	1,130,194	1,095,466	1,097,688
West coast South America to Africa:			
Nitrate of soda.....	361,931	336,705	260,765
All other and unclassified.....	5,973	74	2,641
Total.....	367,904	336,779	263,406
Hawaiian Islands to east coast United States:			
Canned fruit.....	199,550	137,560	125,787
Molasses.....	19,831		15,057
Metal, scrap.....	58,670	38,033	1,178
Sugar.....	77,706		16,070
All other and unclassified.....	37,724	52,584	43,511
Total.....	393,481	228,177	201,603
Hawaiian Islands to east coast Canada:			
Metal, scrap.....	8,260	12,550	20,158
Total.....	8,260	12,550	20,158
Hawaiian Islands to Europe:			
(No single outstanding commodity in this trade.)			
Australasia to east coast United States:			
Metal:			
Iron.....	28,492	10,518	1,500
Lead.....	33,855	8,994	6,518
Scrap.....	32,468	21,433	353
Ore, chrome.....	57,005	31,294	8,050
Sand.....	14,947	15,751	26,168
Skins and hides.....	14,153	10,969	23,109
Wool.....	35,376	53,039	115,774
All other and unclassified.....	39,606	38,280	15,160
Total.....	255,902	190,278	196,632

TABLE NO. 42.—*Important commodity shipments over principal trade routes, Pacific to Atlantic—Continued*

[Tons of 2,240 pounds]

	Fiscal year		
	1949	1948	1947
Australasia to east coast Canada:			
Fruit, dried.....	14,001	4,139	10,480
Metal, scrap.....	2,321	3,652	21,564
Sugar.....	37,056	-----	-----
Wool.....	16,131	10,835	19,197
All other and unclassified.....	20,046	17,780	14,491
Total.....	89,558	36,406	65,732
Australasia to Europe:			
Canned food products.....	34,968	24,563	30,142
Copra.....	97,212	92,851	58,975
Dairy products, refrigerated.....	232,661	200,623	183,937
Fruit, fresh.....	12,282	19,826	1,180
Meat, refrigerated.....	340,379	335,567	306,446
Metal:			
Lead.....	24,565	13,845	17,844
Zinc.....	10,050	10,535	1,985
Other and unclassified.....	1,260	5,885	11,122
Ore:			
Chrome.....	5,400	18,634	10,064
Zinc.....	22,086	25,606	29,937
Other and unclassified.....	116	6	12,694
Peas, dried.....	7,002	12,439	3,814
Skins and hides.....	17,908	20,338	13,782
Sugar.....	46,654	9,542	17,457
Tallow.....	26,157	20,906	21,578
Wheat.....	46,130	26,884	-----
Wool.....	161,646	148,355	130,132
Milk, powdered.....	13,976	5,340	5,704
All other and unclassified.....	98,480	52,550	50,811
Total.....	1,198,932	1,044,295	907,664
Asia to east coast United States:			
Coconuts.....	31,516	26,492	8,552
Copra.....	104,351	125,251	225,835
Hemp, unmanufactured.....	17,272	29,702	35,806
Metal:			
Lead.....	1,541	-----	16,056
Zinc.....	640	1,014	11,735
Scrap.....	195,220	26,839	-----
Ore:			
Bauxite.....	421,610	120,809	7,363
Chrome.....	165,645	141,686	64,258
Manganese.....	26,698	15,600	9,169
Other and unclassified.....	41,247	47,145	11,108
Rubber, crude.....	69,712	63,006	33,747
Sugar.....	367,915	66,078	-----
Vegetable oil:			
Coconut.....	29,969	14,263	3,574
Wood.....	31,906	31,280	20,254
Other and unclassified.....	3,939	3,012	6,487
All other and unclassified.....	179,473	79,553	58,417
Total.....	1,688,654	791,730	512,361
Asia to east coast Canada:			
Metal, scrap.....	29,020	-----	-----
All other and unclassified.....	-----	4,112	33
Total.....	29,020	4,112	33
Asia to east coast South America:			
Copra.....	10,830	5,562	4,000
All other and unclassified.....	-----	2,079	862
Total.....	10,830	7,632	4,862
Asia to Europe:			
(No single outstanding commodity in this trade.)			

TABLE NO. 43.—*Vessels transiting Canal free of tolls*

	Fiscal year 1949			Total	
	Atlantic to Pacific	Pacific to Atlantic	Total	Fiscal year 1948	Fiscal year 1947
UNITED STATES GOVERNMENT VESSELS					
Number of transits:					
On net tonnage basis:					
Chartered.....	174	131	305	238	200
Owned.....	340	372	712	601	651
On displacement tonnage basis (owned).....	96	152	248	211	388
Total transits.....	610	655	1,265	1,050	1,239
Tonnage:					
Panama Canal net:					
Chartered.....	922,310	710,433	1,632,743	1,260,649	1,129,052
Owned.....	438,691	386,614	825,305	343,780	473,221
Total Panama Canal net tonnage.....	1,361,001	1,097,047	2,458,048	1,604,429	1,582,273
Displacement (owned).....	211,376	499,081	710,457	849,683	1,879,401
Approximate value of tolls:					
Chartered.....	\$830,079	\$551,851	\$1,381,930	\$1,072,898	\$937,840
Owned (including displacement).....	495,441	584,246	1,079,687	716,679	1,326,673
Total value of tolls.....	1,325,520	1,136,097	2,461,617	1,789,577	2,264,513
Cargo (tons):					
Chartered.....	1,643,436	238,511	1,881,947	1,365,419	800,256
Owned.....	230,333	105,381	335,714	133,707	183,609
Total cargo.....	1,873,769	343,892	2,217,661	1,499,126	983,865
COLOMBIAN NAVAL VESSELS					
Number of transits:					
On net tonnage basis.....	6	5	11	7	12
On displacement tonnage basis.....	4	6	10	4	7
Total transits.....	10	11	21	11	19
Tonnage:					
Panama Canal net.....	5,236	4,584	9,820	12,394	22,782
Displacement.....	6,674	8,187	14,861	4,270	910
Approximate value of tolls.....	\$8,050	\$7,394	\$15,444	\$12,281	\$19,955
Cargo (tons).....	10,080		10,080	6,409	17,743
PANAMANIAN GOVERNMENT VESSELS					
Number of transits:					
On net tonnage basis.....	2	1	3	8	2
On displacement tonnage basis.....					
Total transits.....	2	1	3	8	2
Tonnage:					
Panama Canal net.....	20	10	30	80	20
Displacement.....					
Approximate value of tolls.....	\$14	\$7	\$21	\$60	\$14
Cargo (tons).....					
VESSELS TRANSITING SOLELY FOR REPAIRS					
Number of transits:					
On net tonnage basis.....	2	2	4	9	5
On displacement tonnage basis.....				1	
Total transits.....	2	2	4	10	5
Tonnage:					
Panama Canal net.....	6,002	6,002	12,004	27,662	29,590
Displacement.....				1,380	
Approximate value of tolls.....	\$5,355	\$5,355	\$10,710	\$22,403	\$21,305
Cargo (tons).....	8,857	8,857	17,714	15,192	

TABLE No. 43.—*Vessels transiting Canal free of tolls*—Continued

	Fiscal year 1949			Total	
	Atlantic to Pacific	Pacific to Atlantic	Total	Fiscal year 1948	Fiscal year 1947
GRAND TOTAL VESSELS TRANSITING FREE					
Number of transits:					
On net tonnage basis	524	511	1,035	863	870
On displacement tonnage basis	100	158	258	216	395
Total transits	624	669	1,293	1,079	1,265
Tonnage:					
Panama Canal net	1,372,259	1,107,643	2,479,902	1,644,565	1,634,665
Displacement	218,050	507,268	725,318	855,333	1,880,311
Approximate value of tolls	\$1,338,939	\$1,148,853	\$2,487,792	\$1,824,321	\$2,305,787
Cargo (tons)	1,892,706	352,749	2,245,455	1,520,727	1,001,608

NOTE.—For further information on tolls-free traffic see page 12.

TABLE No. 44.—*Water supply and expenditures*

	Million cubic feet, year ended June 30—		Percent of water consumption, year ended June 30—	
	1949	1948	1949	1948
MADDEN AND GATUN LAKE WATER SUPPLY				
Total flow into Madden Lake	69,801	67,925		
Evaporation from Madden Lake	2,293	2,344		
Net annual run-off available, Madden Lake	67,508	65,581		
Total flow into Gatun Lake	95,393	105,879		
Subtotal	162,901	171,460		
Evaporation from Gatun Lake	20,081	20,630		
Net annual run-off available, Gatun Lake	142,820	150,830		
MADDEN LAKE WATER EXPENDITURES				
Madden hydroelectric power	55,612	53,629	91.1	78.8
Madden spillway discharge	5,422	14,460	8.9	21.2
Total Madden Lake expenditures	61,034	68,089	100.0	100.0
Net annual run-off available, Madden Lake	67,508	65,581		
Net storage gain or loss, Madden Lake	+6,474	-2,508		
GATUN LAKE WATER EXPENDITURES				
Gatun hydroelectric power	77,091	78,986	60.3	49.1
Gatun and Pedro Miguel lockages	37,129	38,825	29.0	24.1
Municipal and other uses	2,608	3,136	2.0	1.9
Gatun spillway discharge	11,033	40,068	8.7	24.9
Total Gatun Lake expenditures	127,861	161,015	100.0	100.0
Net annual run-off available, Gatun Lake	142,820	150,830		
Net storage gain or loss, Madden and Gatun Lakes	+14,959	-10,185		

TABLE NO. 45.—*Dredging operations, fiscal year 1949*

(Cubic yards)

Location	Earth	Rock	Total
Canal prism dredging:			
Atlantic entrance, maintenance.....	2, 164, 500	30, 000	2, 194, 500
Gatun Lake, maintenance.....	2, 364, 800	89, 700	2, 454, 500
Gaillard cut, maintenance, including slides.....	549, 000	114, 900	663, 900
Gaillard cut, project No. 13.....	44, 100	351, 300	395, 400
Pacific entrance, maintenance.....	2, 830, 000	-----	2, 830, 000
Total, Canal prism.....	7, 952, 400	585, 900	8, 538, 300
Auxiliary dredging:			
Cristobal harbor approach channel.....	472, 900	-----	472, 900
Limon Bay anchorage.....	1, 432, 500	-----	1, 432, 500
Total, auxiliary.....	1, 905, 400	-----	1, 905, 400
Grand total, fiscal year 1949.....	9, 857, 800	585, 900	¹ 10, 443, 700
Grand total, fiscal year 1948.....	6, 314, 100	800, 600	¹ 7, 114, 700

¹ In addition 28,785 cubic yards of chame sand were produced in the fiscal year 1949 and 43,695 cubic yards in 1948.

Dredging operations are divided into three major districts, the Atlantic district extending from contour 42 feet below mean sea level in the Atlantic Ocean to Gatun locks; the central district, extending from Gatun locks to Pedro Miguel locks; and the Pacific district, extending from Pedro Miguel locks to contour 50 feet below mean sea level in the Pacific Ocean. The total excavation in these three areas is summarized as follows:

(Cubic yards)

	District			Total
	Atlantic	Central	Pacific	
Canal prism:				
Earth.....	2, 164, 500	2, 957, 900	2, 830, 000	7, 952, 400
Rock.....	30, 000	555, 900	-----	585, 900
Total.....	2, 194, 500	3, 513, 800	2, 830, 000	8, 538, 300
Auxiliary:				
Earth.....	1, 905, 400	-----	-----	1, 905, 400
Rock.....	-----	-----	-----	-----
Total.....	1, 905, 400	-----	-----	1, 905, 400
Total:				
Earth.....	4, 069, 900	2, 957, 900	2, 830, 000	9, 857, 800
Rock.....	30, 000	555, 900	-----	585, 900
Grand total:				
Fiscal year 1949.....	4, 099, 900	3, 513, 800	2, 830, 000	¹ 10, 443, 700
Fiscal year 1948.....	3, 018, 300	3, 236, 500	616, 600	¹ 6, 871, 400

¹ Does not include Chagres River gravel or Chame sand service.

TABLE NO. 46.—*Principal equipment operated by dredging division, fiscal year 1949*

Unit and name	Type	In service (months)	Out of service (months)	
			Repairs	Reserve or stand-by
Dredges:				
Cascadas.....	15-yard dipper.....	9.4	2.6	-----
Gamboa.....	do.....			12.0
Paraiso.....	do.....	2.6		9.4
Las Cruces.....	24-inch suction.....			12.0
Mindi.....	28-inch suction.....	11.6	.4	-----
Craneboat, Atlas.....	75-ton.....	12.0		-----
Derrick barge, No. 157.....	40-ton.....			12.0
Grader barge, No. 4.....	14-inch pumps.....	11.7	.3	-----
Relay barges:				
No. 3.....		4.3		7.7
No. 24.....				12.0
Drillboats:				
Vulcan.....	Air.....	5.8		6.2
Thor.....	do.....			12.0
Air compressor, No. 29.....	2,500 cubic feet per minute.....			12.0
Floating cranes:				
Ajax.....	250-ton.....	5.1	.5	6.4
Hercules.....	do.....	6.9	0	5.1
Ferry boats:				
Presidente Amador.....		11.5	.2	.3
Presidente Roosevelt.....		6.7	2.9	2.4
Presidente Porras.....		5.5	1.2	5.3

In addition to the above, large and small tugs and an attendant fleet of dump scows, sand barges, and service lighters, launches, quarter boats, and related drilling and excavating equipment were also operated as part of the dredging plant.

TABLE NO. 47.—*Activities of oil-handling plants*

	Fiscal year		
	1949	1948	1947
Fuel and Diesel oil:	<i>Barrels</i>	<i>Barrels</i>	<i>Barrels</i>
Received by The Panama Canal.....	404,250	189,701	306,382
Used by The Panama Canal.....	195,892	227,490	242,020
Sold by The Panama Canal.....	139,615	111,579	18,885
Miscellaneous transfers on tank farms.....	11,320	12,486	3,907
Pumped for outside interests.....	10,389,753	11,697,918	9,995,865
Total barrels handled.....	11,140,830	12,239,174	10,567,059
Handled at Mount Hope (Atlantic side).....	8,420,750	7,937,923	8,052,849
Handled at Balboa and Gamboa (Pacific side).....	2,720,080	4,301,251	2,514,210
Number of ships discharging or receiving fuel and Diesel oil:			
Panama Canal craft.....	154	158	196
All others.....	2,328	2,037	2,089
Total.....	2,482	2,195	2,285
Gasoline and kerosene received:			
By The Panama Canal:	<i>Gallons</i>	<i>Gallons</i>	<i>Gallons</i>
Bulk gasoline.....	14,822,217	9,910,216	11,676,512
Bulk kerosene.....	1,993,956	2,129,832	2,962,649
By outsiders:			
Bulk gasoline.....	19,471,182	28,662,372	25,999,761
Bulk kerosene.....	4,637,521	3,534,388	2,925,436
Financial results of operations:			
Total revenues.....	\$3,159,751	\$3,033,810	\$2,140,793
Total expenditures (including cost of sales).....	3,025,476	2,853,194	2,063,244
Net revenues.....	134,275	180,616	77,549

TABLE NO. 48.—Number of employees paid at United States rates

	As of		Increase	Decrease
	June 30, 1949	June 26, 1948		
THE PANAMA CANAL—TRANSIT UNITS				
Management				
Offices of—				
Governor.....	4	3	1	
Engineer of maintenance.....	16	13	3	
Director of finance.....	5	6		
Canal operation				
Assistant engineer of maintenance.....	4	5		1
Locks division.....	337	341		4
Marine division.....	237	237		
Dredging division.....	155	174		19
Office engineering division.....	87	83	4	
Meteorology and hydrology.....	15	14	1	
Utilities and services				
Department of finance.....	277	309		23
General counsel.....	5	3	2	
General correspondence and records.....	45	45		
Personnel supervision and management.....	75	76		1
Pay roll bureau.....	56	45	11	
Public buildings and grounds.....	60	59	1	
Thatcher ferry.....	30	31		1
Air terminal.....	7	7		
Civil government				
Executive secretary.....	3	4		1
Police section (including civil intelligence).....	217	210	7	
Fire section.....	77	78		1
Civil affairs division.....	68	66	2	
Magistrates' courts.....	6	7		1
License bureau.....	4	5		1
Schools division.....	195	187	8	
Libraries.....	9	9		
Physical education and recreation.....	24	22	2	
Sanitation				
Chief, health office.....	16	15	1	
Hospitals.....	396	409		13
Dental clinics.....	9	10		1
Venereal disease control.....	21	21		
Dispensaries.....	43	44		1
Quarantine and immigration.....	16	17		1
Sanitation.....	47	40	7	
Canal studies 1947				
Special engineering division.....	31	59		28
Subtotal—transit.....	2,597	2,645	50	98
Net decrease.....				48
THE PANAMA CANAL—BUSINESS DIVISIONS, POSTS, AND CLUBHOUSES				
Water system.....	45	44	1	
Electric power system.....	53	54		1
Municipal work.....	131	123	8	
Electrical work.....	161	155	6	
Mechanical division.....	528	689		161
Building division.....	153	151	2	
Motor transportation.....	158	170		12
Storehouses.....	75	86		11
Oil-handling plants.....	45	45		
Gravel plant.....		1		1
Sosa Hill quarry.....	3	5		2
Panama Canal press.....	27	14	13	
Gasoline stations.....	3	3		
Canal Zone posts.....	118	121		3
Clubhouses.....	83	86		3
Subtotal—business divisions, posts, and clubhouses.....	1,583	1,747	30	194
Net decrease.....				164
Total, The Panama Canal.....	4,180	4,392	80	292
Net decrease.....				212

TABLE NO. 48.—*Number of employees paid at United States rates—Continued*

	As of		Increase	Decrease
	June 30, 1949	June 26, 1948		
PANAMA RAILROAD COMPANY				
General manager's office.....	9	7	2	
Railroad proper:				
Transportation.....	67	89		22
Roadmaster.....	16	17		1
Signal section.....	5	4	1	
Receiving and forwarding agency.....	100	106		6
Commissary division.....	344	347		3
Hotel Tivoli.....	13	14		1
Hotel Washington.....	9	11		2
Telephone section.....	36	33	3	
Total, Panama Railroad Company.....	599	628	6	35
Net decrease.....				29
Total force.....	4,779	5,020	86	327
Net decrease, total force.....				241

TABLE NO. 49.—*Number of employees paid at local rates*

	As of		Increase	Decrease
	June 30, 1949	June 26, 1948		
THE PANAMA CANAL—TRANSIT UNITS				
<i>Canal operation</i>				
Locks division.....	822	1,036		214
Marine division.....	897	904		7
Dredging division.....	835	934		99
Office engineering division.....	46	76		30
Meteorology and hydrography.....	32	29	3	
<i>Utilities and services</i>				
Department of finance.....	9	9		
General correspondence and records.....	38	40		2
Personnel supervision and management.....	27	28		1
Pay roll bureau.....	20	18	2	
Public buildings and grounds.....	451	450	1	
Thatcher ferry.....	70	70		
Air terminal.....	23	263		3
<i>Civil government</i>				
Police section (including civil intelligence).....	48	43	5	
Magistrates' courts.....	2	2		
License bureau.....	1	1		
Schools division.....	192	165	27	
Libraries.....	3	3		
Physical education and recreation.....	35	35		
Civil affairs division.....	3		3	
<i>Sanitation</i>				
Chief health office.....	1	1		
Hospitals.....	862	921		59
Dental clinics.....	15	17	2	
Veneral disease control.....	16	21		5
Dispensaries.....	37	36	1	
Cemeteries.....	36	36		
Quarantine and immigration.....	24	29		5
Sanitation.....	611	533	78	
<i>Canal studies 1947</i>				
Special engineering division.....	43	66		23
Subtotal—transit.....	5,199	5,529	120	450
Net decrease.....				330

TABLE NO. 49.—*Number of employees paid at local rates—Continued*

	As of		Increase	Decrease
	June 30, 1949	June 26, 1948		
THE PANAMA CANAL—BUSINESS DIVISIONS, POSTS, AND CLUBHOUSES				
Water system.....	80	81	-----	1
Electric power system.....	101	103	-----	2
Municipal work.....	841	832	9	-----
Electrical work.....	242	231	11	-----
Mechanical division.....	933	1,081	-----	148
Building division.....	1,084	1,182	-----	98
Motor transportation.....	451	457	-----	6
Quarters—janitors.....	163	166	-----	3
Storehouses.....	369	377	-----	8
Oil-handling plants.....	122	123	-----	1
Gravel plant.....	-----	10	-----	10
Sosa Hill quarry.....	38	78	-----	40
Panama Canal press.....	125	124	1	-----
Gasoline stations.....	30	26	4	-----
Canal Zone posts.....	61	60	1	-----
Clubhouses.....	972	1,088	-----	116
Subtotal—business divisions, posts and, club- houses.....	5,612	6,019	26	433
Net decrease.....	-----	-----	-----	407
Total, the Panama Canal.....	10,811	11,548	146	883
Net decrease.....	-----	-----	-----	737
PANAMA RAILROAD COMPANY				
General manager's office.....	2	3	-----	1
Railroad proper:				
Transportation.....	258	306	-----	48
Roadmaster.....	176	177	-----	1
Signal section.....	13	14	-----	1
Receiving and forwarding agency.....	2,083	2,221	-----	138
Commissary division.....	2,900	3,094	-----	194
Hotel Tivoli.....	189	205	-----	16
Hotel Washington.....	106	127	-----	21
Telephone section.....	21	21	-----	-----
Total, Panama Railroad Company.....	5,748	6,168	-----	420
Net decrease.....	-----	-----	-----	420
Total force.....	16,559	17,716	146	1,303
Net decrease, total force.....	-----	-----	-----	1,157

TABLE NO. 50.—*Quarantine and immigration activities*

	Fiscal year		
	1949	1948	1947
Vessels inspected and passed.....	3, 945	6, 325	5, 653
Vessels granted pratique by radio.....	90	19	127
Vessels inspected for immigration only, since September 1948..	678	-----	-----
Total.....	4, 713	6, 344	5, 780
Crew passed at quarantine.....	290, 841	285, 584	257, 131
Crew passed by radio.....	18, 282	4, 640	5, 986
Passengers passed at quarantine.....	69, 810	64, 219	68, 529
Passengers passed by radio.....	20	35	-----
Total.....	378, 953	354, 478	331, 646
Airplanes inspected and passed.....	4, 455	4, 821	5, 136
Crew of airplanes inspected and passed.....	19, 865	19, 180	21, 296
Passengers of airplanes inspected and passed.....	66, 687	62, 964	66, 816
Total.....	86, 552	82, 144	88, 112
Vessels detained in quarantine.....	1	6	1
Crew detained in quarantine on board ship.....	231	213	100
Passengers detained in quarantine on board ship.....	801	15	900
Crew admitted to hospital on account of quarantine laws.....	1	14	-----
Passengers admitted to hospital on account of quarantine laws.....	1	1	-----
Number of incoming passengers vaccinated against smallpox.....	1, 412	1, 002	4, 192
Immigration cases admitted to station.....	1, 195	1, 531	3, 970
Number of immigration detention days at station.....	10, 219	17, 771	32, 794
Persons held or detained for investigation and released.....	38	37	144
Persons repatriated under immigration laws.....	1, 195	1, 682	3, 820
Supplementary sanitary inspection of vessels.....	3, 628	3, 393	3, 405
Deratization exemption inspection of vessels.....	224	91	-----
Number of vessels fumigated.....	39	53	81

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